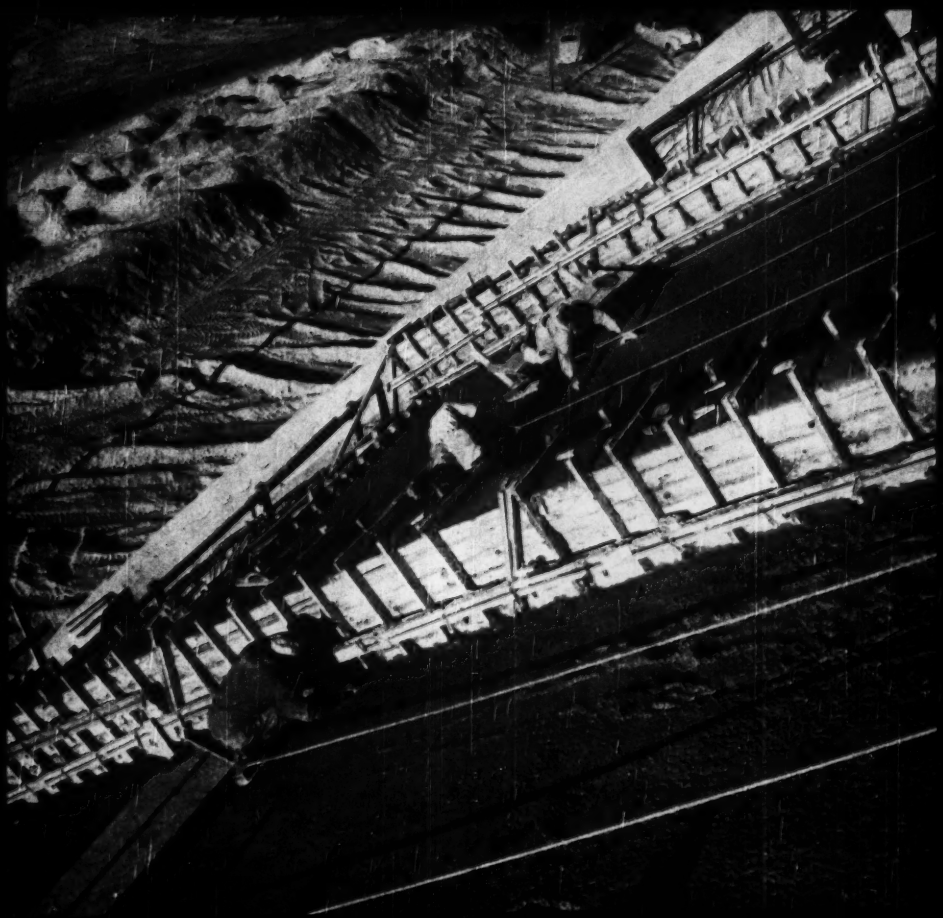
ENGINEERING NEWS-RECORD



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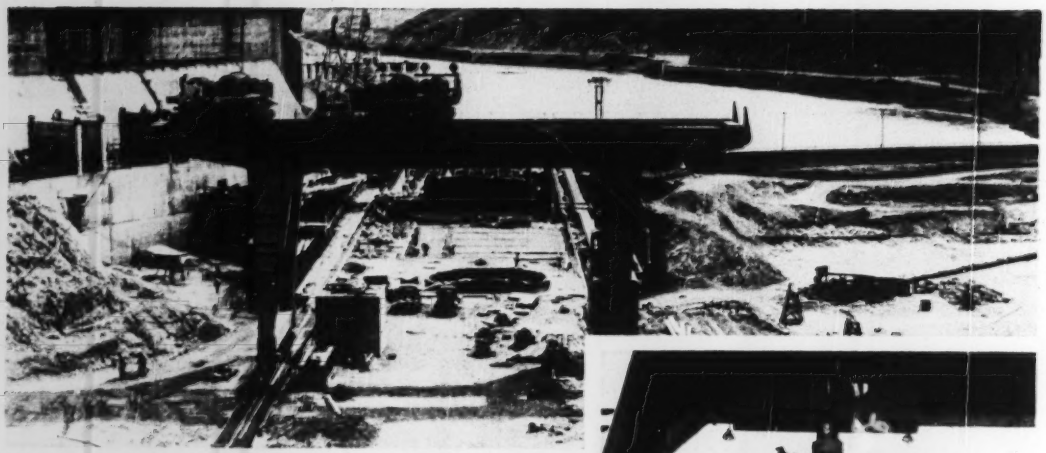
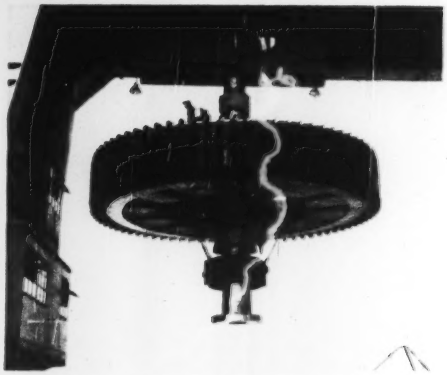


325-ton G-E powered gantry Star Iron and Steel crane at the Davis Dam site on the Colorado River. The crane must operate almost continuously during installation of five turbine generators.

Jogging a 325-ton load 1/10,000 inch at a time

... Electrically



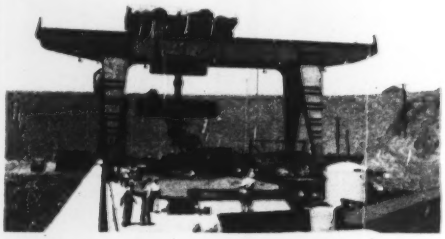
G-E hoist motors and control lift and accurately position turbine-generator rotors weighing over 300 tons.

G-E powered DAVIS DAM CRANE positions heaviest loads accurately, smoothly, safely

It's an unusually versatile crane drive that can either handle an empty hook at twice rated speed, or jog a 325-ton load to within 1/32 inch. Bureau of Reclamation's specifications for Davis Dam outdoor powerhouse crane called for just that type of operation.

The General Electric drive beat the requirements for this job by a wide margin—the full-load jogging accuracy in the lowering direction was .000114 inch.

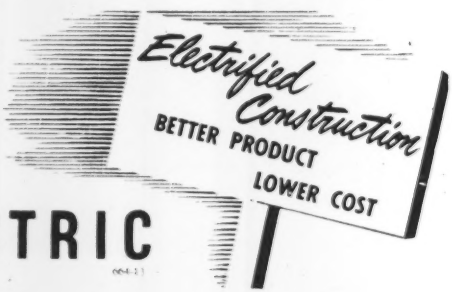
Electrified construction equipment can work for you too—can give you the fast, safe, efficient service your job calls for. And when you combine G-E motors and control with a G-E power distribution system, you'll get all that electrified equipment can offer with the extra benefits of G-E engineering assistance in application, installation and service. *Apparatus Dept, General Electric Company, Schenectady 5, N. Y.*



From hoist and trolley motors atop the bridge to master switches inside the cab, all G-E equipment on this Star Iron and Steel crane works smoothly to move heavy loads accurately and safely.

Ask him Today!

Whether you buy or build construction equipment, your G-E representative can show you how to do a better job at lower cost by complete electrification. Write him now, and he'll call on you at your convenience.



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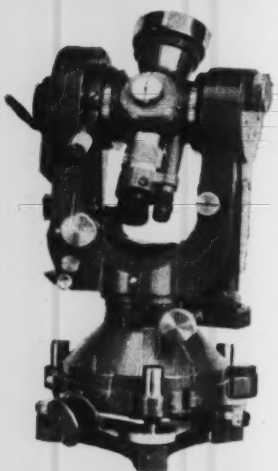

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ENGINEERING NEWS-RECORD

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Volume 145 NOVEMBER 2, 1950 No. 18

WALDO G. BOWMAN
Editor

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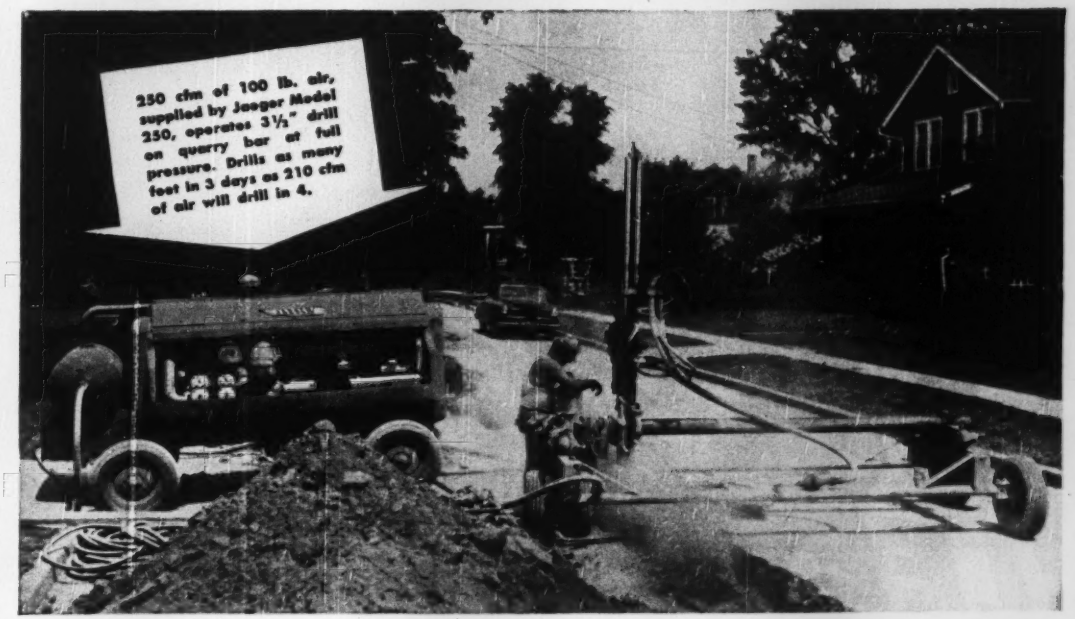
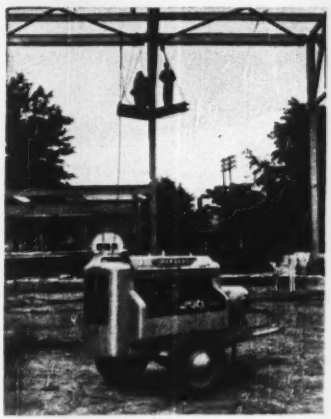
Doing 4 Days' Work in 3


250 cfm of 100 lb. air, supplied by Jaeger Model 250, operates 3½" drill on quarry bar at full pressure. Drills as many feet in 3 days as 210 cfm of air will drill in 4.



More Air to Do More Work! "Air Plus" Model 75 efficiently operating 8" stroke riveting hammer and pneumatic holder—too big a job for any 60 ft. compressor.

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JAEGER "Air-Plus" gives you most air per dollar, up to 40% more production with same men and tools

"new standard" sizes: 75 - 125 - 185 - 250 - 365 - 600 cfm
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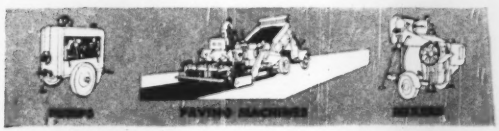
From the Model 75, that runs a heavy breaker at full pressure, up to the Model 600 that holds full pressure in two 4" wagon drills plus an auxiliary drill, Jaeger "new standard" compressors give you the bigger volume of 100 lb. air you need to get maximum production with today's tools — *and deliver that volume at the lowest cost per cubic foot of air of any compressors on the market.*

Tools that starve with 70 lbs. pressure from undersized compressors hit hard and fast profitably when you step up that pressure and hold it at a steady 90 lbs. Talk it over with your Jaeger distributor—or ask for Catalog JC-8.



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Now comes the great New *Mid-Century* Fleetmaster to meet the trucking demands of construction men everywhere. Truckers who need the spearhead depth of its traction off the road—its smooth, free-rolling qualities on secondary road and highway.

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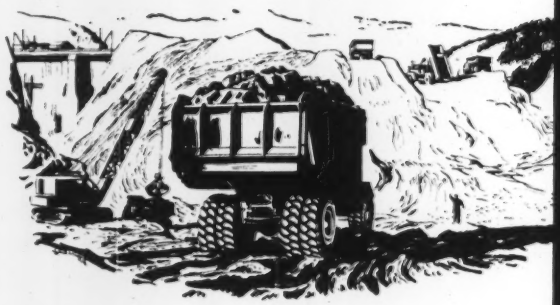

UNITED STATES

Highway Rolling *never possible before*

On-and-off-the-road performance never known before—

From Excavation, Up and Over the Road or Highway

TODAY'S SUPREME TRUCK TIRE WITH HIGHWAY AND OFF-THE-ROAD TRACTION
never possible before!

★ *Job-fitted tread and sidewall compounds*
★ *Free-rolling tread surface*
★ *SPEARHEAD depth traction*
★ **NON-SKID** ★ **CHIP-RESISTANT**

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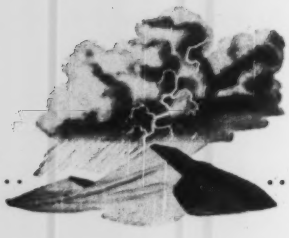
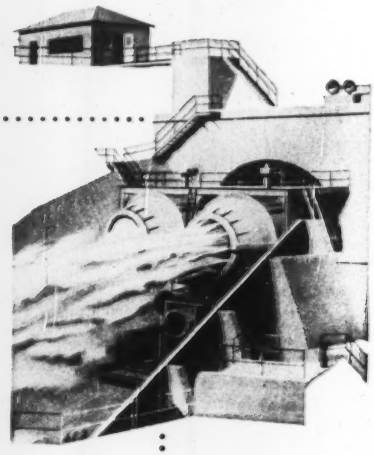
YARDSTICK FOR A FLOOD... or how to insure years of accurate Venturi-metering in giant penstocks





Accurate regulation of fast-flowing debris-laden water in San Gabriel Dam No. 1—world's greatest earth- and rock-filled structure—posed an important engineering problem. Four specially designed nickel-clad steel Venturi tubes were finally specified and installed. Designed for maximum discharge, these tubes have much higher throat velocities than ever before used and a differential pressure of about 22 feet of water between inlet and throat. Although tubes were of welded construction, riveted joints, with ¼" space between throats and inlets and outlets, were used in the tunnel sections to facilitate replacement, if required. Uniqueness of the installation required development of special flow measuring instruments using mercury. This Venturi design has been entirely satisfactory in over 13 years of operation giving consistent accuracy of metering with minimum maintenance.

Advances in structural design have resulted in increased efficiency . . . lower maintenance and operating costs . . . improved performance. Many improvements have been the result of close cooperation between designer, engineer, fabricator and materials supplier. We call this *Lukenomics*. Such an approach is at your disposal to help solve your cost and amortization problems along with other vital considerations.

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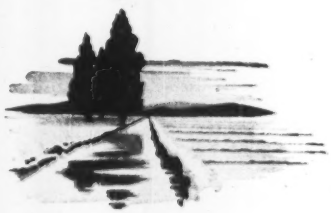

San Gabriel Dam No. 1 was constructed by Los Angeles County Flood Control District. Lukens Nickel-Clad Steel was selected for Venturi tubes because of the severe corrosive and erosive action of silt- and debris-laden flood waters.

LUKENS

LUKENS STEEL COMPANY

BETTER PRODUCTS FOR BETTER EQUIPMENT

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SUSTAINED EARNING POWER—*that's Mack*

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Mack's proved superiority in earth moving work rests on *built-in superiority* of design and construction. In addition to their inherent power, strength and durability, Mack trucks bring you outstanding advances in maneuverability, ease of control, positive traction and maintenance accessibility.

Follow the lead of profit-wise operators who have discovered from actual experience that when it comes to working harder, lasting longer and operating at lowest cost—there's nothing to equal a Mack. Your nearest Mack branch or distributor will give you the full story on what Mack's *sustained earning power* can mean to you in greater profits through greater output at lower cost.

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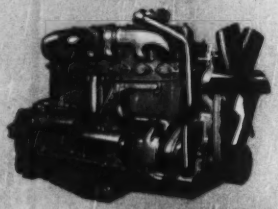
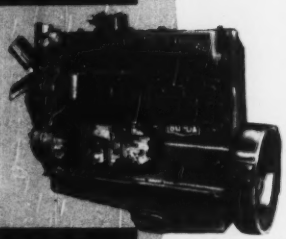
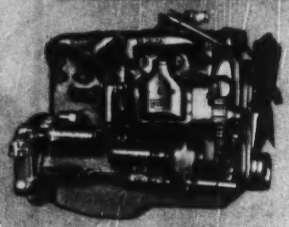
3 NEW DYNA-SWIRL DIESELS



6 DA-779
185 H. P.



6 DA-844
215 H. P.



6 DAS-844
SUPERCHARGED
280 H. P.

BC-7

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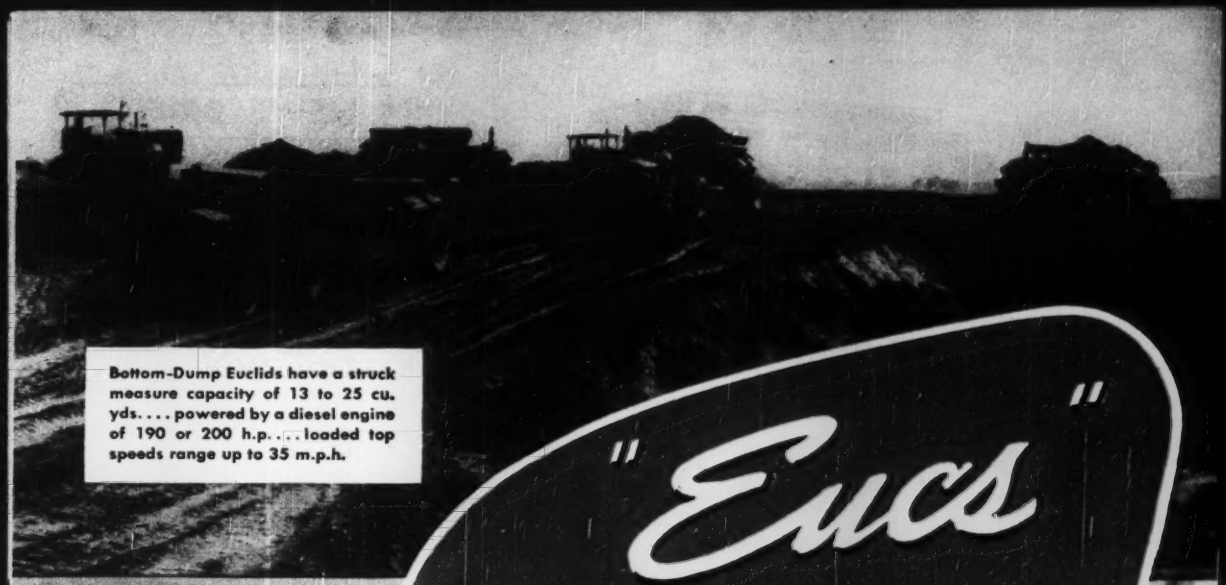

Bottom-Dump Euclids have a struck measure capacity of 13 to 25 cu. yds. . . . powered by a diesel engine of 190 or 200 h.p. . . . loaded top speeds range up to 35 m.p.h.

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Here's a team — the Euclid Bottom-Dump and the Euclid Loader — that has set new records for low cost earth moving on a wide range of jobs... dams, levees, airports, highway and railroad construction, industrial plant grading and overburden removal.

Bottom-Dump Euclids combine rugged construction, large capacity and fast travel speeds for more profit per load. Designed and built for rugged off-the-highway hauling, "Eucs" provide dependable performance and low hauling cost per pay yard. Owners say: "Bottom-Dumps sure do the job, and at lower cost, too."

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NEWS BRIEFS

Abridged building code—Following the recent release of the Abridged Building Code, the first printed edition of the Basic Building Code is now being distributed by the Building Officials Conference of America, Inc., which presents this as a solution to the problem of restrictive and ineffective building law administration. The abridged code has already been adopted by many municipalities with populations of 1000 to 15,000. Many cities have expressed their intention of adopting the comprehensive code. Connecticut has the adoption of both the A.B.C. and the B.B.C. under consideration as state-wide codes.

Air passenger terminal — Immediate construction of a $6,000,000 passenger terminal building at Newark, N. J., Airport has been authorized by the Port of New York Authority. It will contain five times the floor space of the present inadequate administration building, as it is designed to accommodate an increase in air passengers from the 1949 figure of 834,916 to an estimated 2,712,000 in 1965.

Merit hiring—The Indiana Highway Users Conference is endeavoring to have the state general assembly pass a merit employment system bill for the highway department. Such a system already has been adopted by the South Carolina highway department to encourage employes to make a career in the highway service. All new workers must serve a probationary period of six months and receive a rating of at least "D" to be considered a regular employe.

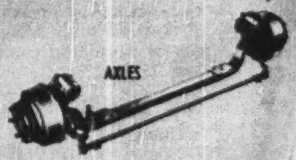
No Russian veto on this—Corps of Engineers officers in the Pacific Northwest are pleased with the results of sand-dune stabilization tests made last year with plants of Volga wild rye grass. Now they're asking for bids on a 30-acre planting of the Russian grass, to stabilize sand banks on a McNary Dam railroad relocation job.

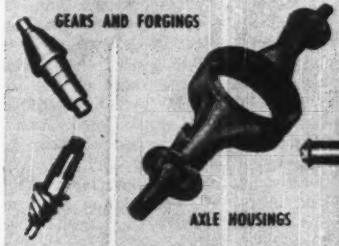
Down upon the Suwanee River—The road department of Florida has named the state road from Jasper to Suwanee the "Stephen Foster Highway" in honor of the composer of "Old Folks at Home."

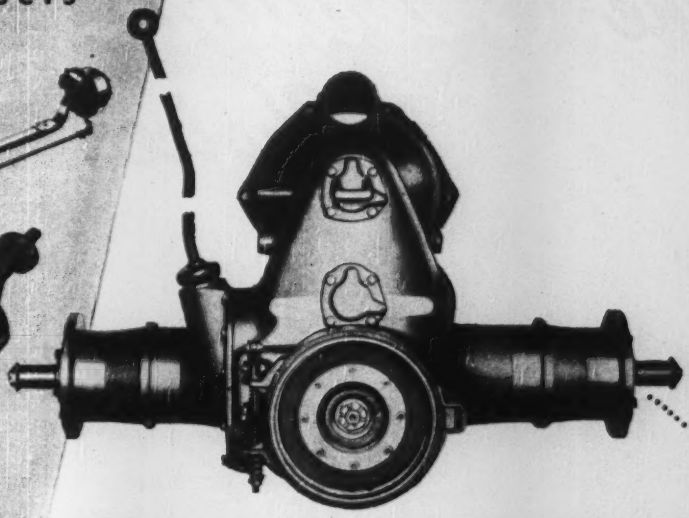
Counterattack — Proponents of a scheme to dam the Hudson River for New York City water supply have struck back at a recent criticism of their plan by the City's Board of

(Continued on page 12)

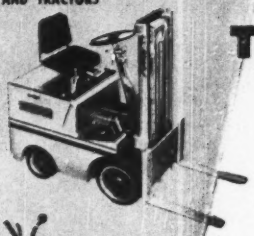
OTHER PRODUCTS OF CLARK—

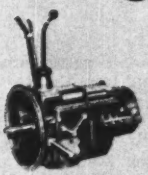






INDUSTRIAL TRUCKS AND TRACTORS





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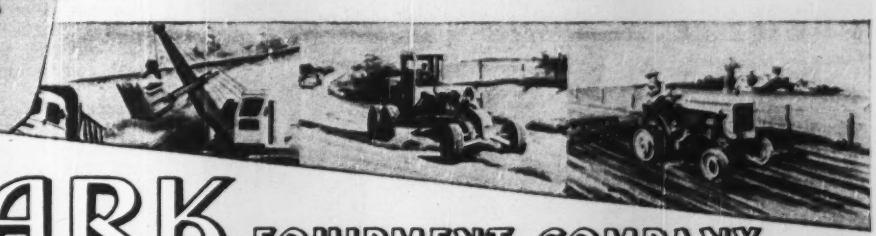

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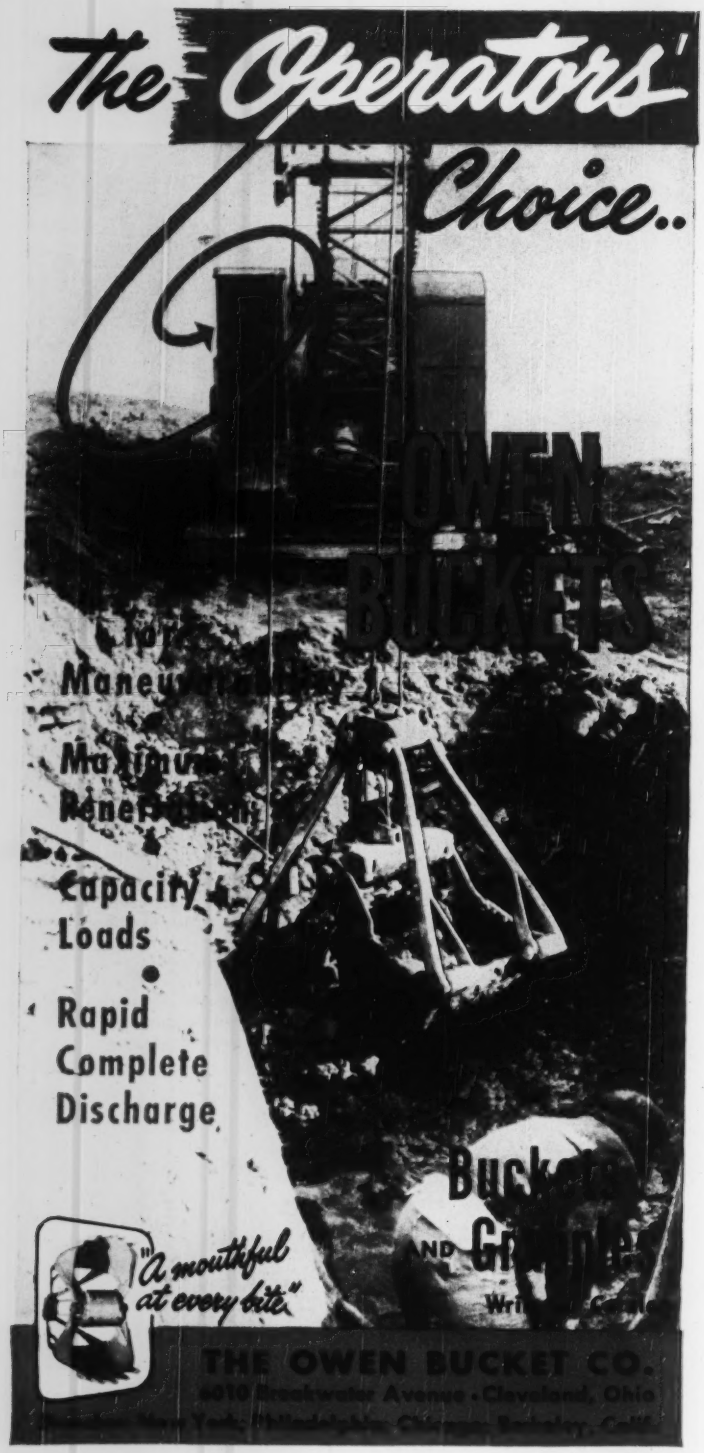

Water Supply (ENR Aug. 3, p. 29). BWS wants to develop further upland sources. The Citizens Budget Commission has asked the State Water Power and Control Board to block such developments until completion of a study being made for the city by a panel of consultants (ENR May 25, p. 27).

More honors for Savage—John Lucian Savage, who has been called "water resources engineer to the world," and is the Reclamation engineer who designed the largest concrete dams on earth and water conservation projects all around the globe, has been awarded the Department of the Interior Gold Medal for Distinguished Service for an unparalleled career, Secretary of the Interior Oscar L. Chapman announced Oct. 2. Mr. Savage was chief design engineer for the Bureau of Reclamation prior to his retirement in 1945.

Skip-stop elevator—A skip-stop elevator system will be used in the three 12-story apartment buildings which the Chicago Dwellings Association will build at a cost of $4,000,000. CDA is the city's not-for-profit organization formed to eliminate speculative profit in construction. Each building will have a passenger and a freight elevator which will stop only at every third floor, according to Architect Joseph Burgee of Holabird, Root & Burgee. Only floors with elevator stops will have corridors. Stairways on those floors will lead to apartments below or above. Elimination of corridors on the nonstop floors, Burgee explained, will provide more space for apartments and reduce construction costs.

Object lesson—The State Department has bought a prefabricated house made in Shakopee, Minn., to exhibit at the Industrial Fair in Berlin, Germany. The exposition site is directly across the boulevard from the Russian sector of Berlin and many visitors from that sector are expected. They will be told the U. S. cost of heat, light and fuel, the method of payment, and the duration of the loan.

Silence!—San Bernardino is the third southern California city to pass an ordinance requiring the use of pavement saws instead of hydraulic jack hammers in street maintenance. Bell and Long Beach have passed similar laws. The San Bernardino ordinance requires the use of pavement saws on all jobs involving more than 125 lin ft. The law was put into effect to cut down on noise and to insure a neater, more even job in tearing up city streets to get at underlying pipes and conduits.

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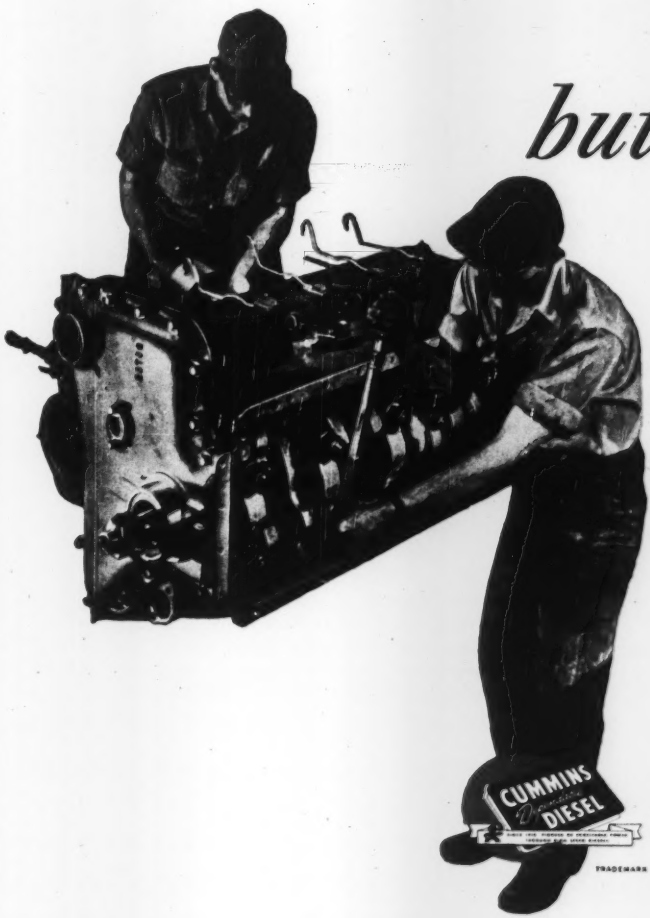

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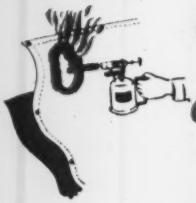

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THE CONSTRUCTION WEEK

AFTER KOREA, WHAT?—What happens to defense plans is the top question facing all business, now that war's end in Korea is in sight. A quick check in Washington gives these pointers: There will be no sudden reversal of direction, despite some anticipated foot-dragging as the shooting stops; spending will keep on up—Congress won't risk economizing on defense, no matter who wins the elections—and that means a total budget somewhere in the $70 billion range; that'll bring some more tax increases—but not quite as great as many thought a few months ago.

BIG MEN WANTED—Executives of proved ability are being recruited for top jobs in the Construction Controls Division and the other divisions of the National Production Authority. Taking a job there nearly always means a sacrifice for the man who accepts, but both the industry and NPA benefit from having top-grade administrators in the key spots.

CIVIL WORKS BUDGET—Government agencies are in the thick of the annual struggle over money estimates for the next fiscal year. Civil works people are proceeding on the basis of the President's July directive—to eliminate projects that don't contribute to the defense economy. The Budget Bureau will determine the final figures.

RAINMAKING LEGISLATION—New Mexico feels that man-made precipitation should be federally controlled. Sen. Clinton Anderson has about completed the drafting of a bill to be introduced at the short session of Congress starting this month. The proposed bill follows the lines of the Atomic Energy Act. It would require federal licensing of rain-making projects and provide enforcement, with possible exemption for damages caused by experiments.

GAS TAX UP?—Illinois, facing loss of federal aid highway funds up to $31,000,000 (ENR July 27, p. 96), might save it through raising gasoline taxes, believes Gov. Adlai Stevenson. He'll ask the January legislature to hike rates from 3 to 5 cents a gallon, raise license fees for trucks.

INFORMATION, PLEASE—Like many another, the Producers' Council (representing manufacturers of building materials and equipment) wanted to know: How far are the cutbacks going to reach? In a statement warning that supply of building materials might get seriously out of balance, A. N. Lane, council president, demanded that the government give the building industry "reasonable limits" to which its intended building cutbacks will reach. "In the absence of such information," said Lane, "there is every possibility that producers of some materials will overshoot the market, while others will be too conservative. Result would be a costly surplus of some products and an equally costly shortage of others."

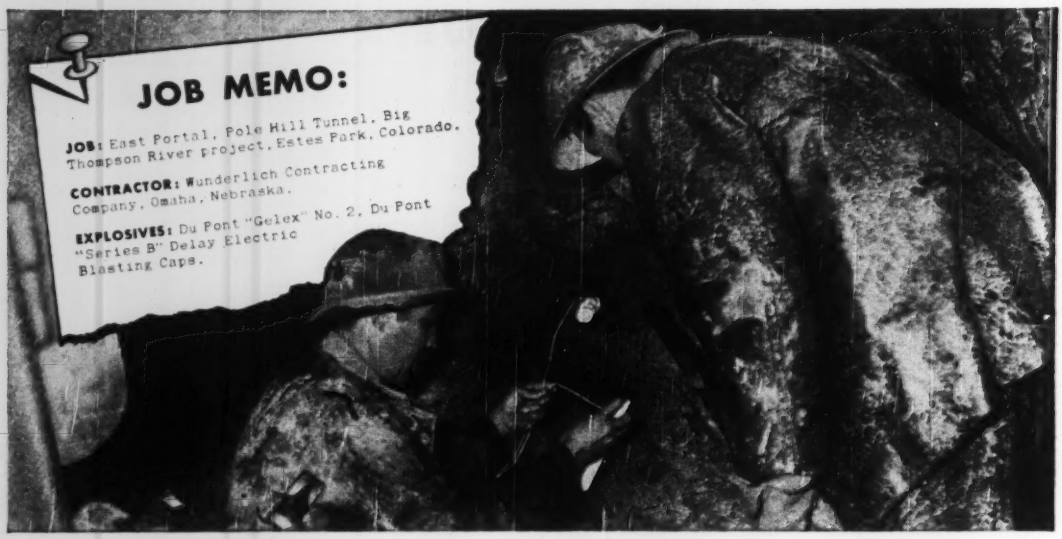
MORE FROM NIAGARA?—Both U. S. and Canadian survey parties are at work along the Niagara River—the Canadians looking for a site for a new diversion intake above the falls for power purposes. U. S. engineers are attempting to estimate the effect of increased water diversion on flow over the falls. Added diversion is provided in newly-ratified (Oct. 10) U. S.-Canada water treaty on the Niagara River.

CANADA CUTS CONSTRUCTION—The Canadian government has announced "severe restrictions" in governmental spending on civilian construction—in terms that are vague as to details but with the objective of chopping a very large part of the projected $400 million federal building program. Similar cuts in capital expenditures by provincial and municipal governments are expected, to ease the pressure on building materials and labor for urgent defense construction. The move was generally supported by the Dominion construction industry. At its October meeting, the management committee of the Canadian Construction Association officially recommended that all public expenditures on building be cut in half immediately.

CONVEYOR STILL WARM—That plan for a $210 million rubber conveyor belt that would transport coal and iron ore between Lorain and East Liverpool, Ohio (ENR May 26, 1949, p. 29), isn't dead yet. Although the state legislature by-passed granting right-of-way for the line and so apparently killed the project, backers are still taking every opportunity to press the idea—before local civic groups, state organizations, anyone else who'll listen.

ONE MORE FOR TVA?—The Tennessee Valley Authority has proposed junking plans for two smaller, non-power dams in favor of a $126 million dam on the Cumberland River in western Kentucky. The new dam—to be located near Grand Rivers, Ky. (east of Paducah)—would replace the already-authorized Kuttawa and Dover navigation dams.

NO PIONEERING SPIRIT?—The Port of New York Authority decided to reject bids received for a prestressed-concrete bridge at LaGuardia Airport. All exceeded the engineer's estimate. PNYA believe contractors are afraid of prestressing, but rather than pay the extra cost of pioneering to prove that there's nothing to fear, PNYA is going to ask for bids on a conventional alternative.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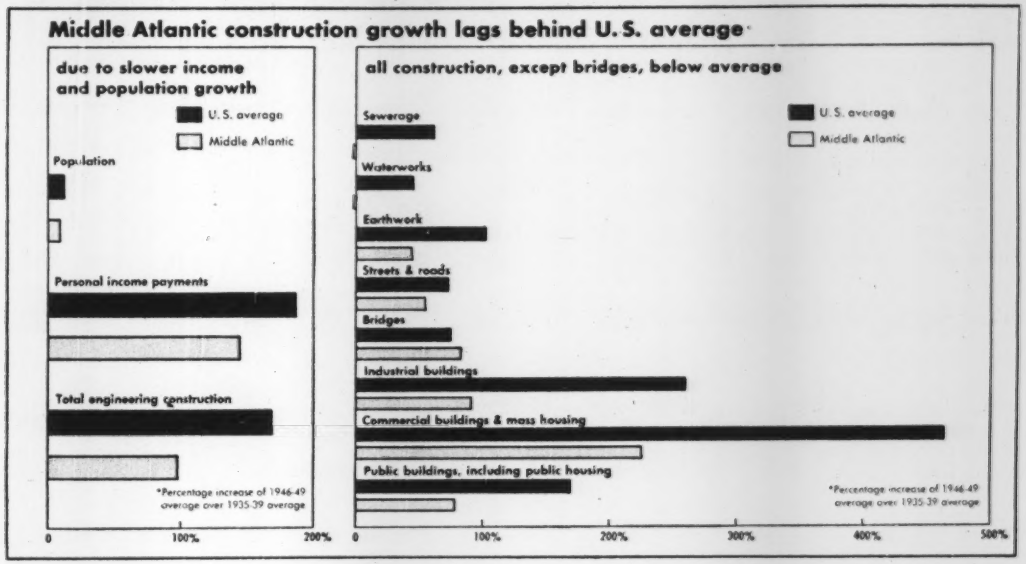


This report—fourth in a series of seven analyses of regional construction trends—is based on special economic study made by ENGINEERING NEWS-RECORD.

Middle-Atlantic Prospects Good

Rising Middle-Atlantic construction soon may be cut back, as mobilization takes more manpower and materials and credit restrictions curtail private building. But, with factories humming, industrial building should boom.

Construction activity in the rich Middle-Atlantic states has been heavy since the war. In 1946-49, the value of annual construction averaged 98% above the 1935-39 average—and the rate went up again in 1950.

Yet the full force of the postwar U. S. building boom missed the Middle-Atlantic region.

The U. S. as a whole boosted the average value of its annual construction 168% over prewar levels. Spectacular increases in the South and West cut the Middle-Atlantic share of total U. S. construction—from a prewar average of 35.3% to 26% during 1946-49.

Basic economic forces pushed construction ahead in other regions. Population, industry, personal incomes—important factors in stimulating construction—all grew faster outside the Middle-Atlantic states.

But, although its growth is slower, the Middle-Atlantic area still has the largest regional share of U. S. population, and the most industrial production. Its citizens get the biggest slice of U. S. income—26.9% in 1946-49. As a result, the Middle-Atlantic states still do more building than any other region.

Commercial building and housing, always a major factor in the Middle-Atlantic region, led the postwar rise in construction. The average annual value of commercial construction, including mass housing, rose 225% over the prewar average.

Activity kept rising in 1950—more commercial building was done in the first half of this year than in all of 1949.

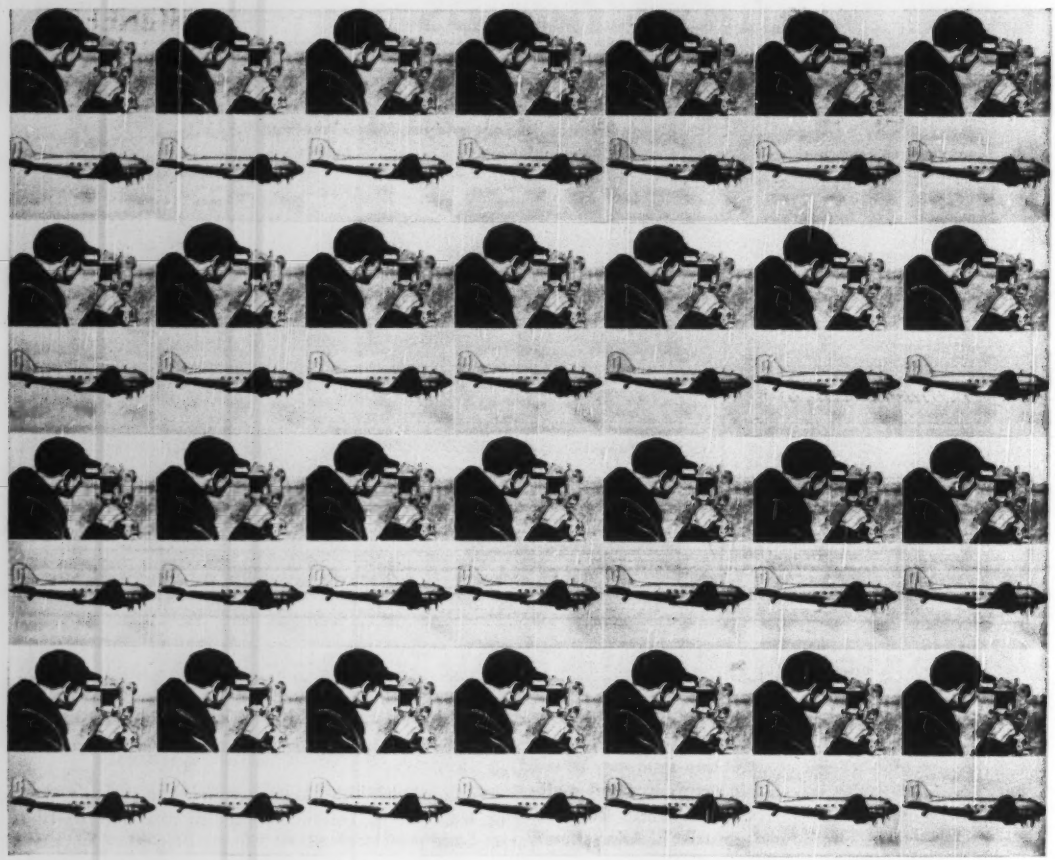
In line with the long-run trend, the region's share of total U. S. commercial building is falling—from 68.3% in 1935-39 to 39.3% in 1946-49. But that's still the largest regional share—twice as big as the next.

Middle-Atlantic industrial building went up after the war—by an average of 91% over the 1935-39 average—and rose again in 1950. Now U. S. mobilization will give high priority to industrial construction, boost it up further next year.

The Middle-Atlantic share of U. S. public construction is falling steadily, although the region still gets more than other areas—27.3% in 1946-49. Many of the region's out-dated public buildings will have to be replaced, and the growing population will force expansion of some facilities, especially public schools.

THE OUTLOOK—In the short run, the prospect is that mobilization will reduce construction in the Middle-Atlantic area. The expected rise in industrial construction should be more than offset by a fall in non-essential building.

For the longer run, the outlook is much better. Long range trends will continue to cut the Middle-Atlantic share of U. S. construction, but the region's big population, industry and income will still support a growing volume of building. Replacement—of roads and industrial, public and commercial buildings—will be increasingly necessary in the future.



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New Role for Contractors

POSSIBILITIES OF CONTRACTORS serving as consultants on building projects constructed by other contractors is suggested by the experience on the First National Building in Tulsa, Okla. (ENR Oct. 26, p. 42). Here a contractor, performing none of the actual building operations, assisted the owners and architects by supplying accurate cost figures during initial and subsequent planning stages. He then aided in purchasing materials, and finally served as the owner's field representative during construction.

Contractors naturally would prefer to concentrate on construction. But they may, at times, have excess supervisory or estimating personnel. This could be utilized on consulting business. Or sometimes, conditions are such that a certain contractor cannot be awarded a job, yet his knowledge would be valuable to it. This was the case on the First National Building. The owners found it desirable to use local contractors, but wanted the additional service that an experienced out-of-town contractor could provide.

That construction knowledge is valuable in planning, estimating and designing has been recognized before. There have been many cases in which the general construction contractor was engaged before the building was designed. Frequently, the contractor, the engineer and the architect have constituted the planning and operating committee for a project. Rockefeller Center was built that way. The Metropolitan Life Insurance Co. has used this method on its construction projects. But in those cases the advisory contractor was also the builder.

The role of consulting contractor is a new one, yet it is not an unnatural development from that of a builder awarded a cost-plus-fixed-fee contract early in the stages of a job. This new role for contractors would seem to be worth investigating; it could prove profitable both for the contractors themselves and for building owners.

What's Essential?

IN THE WEEKS AHEAD many appeals will be made to Washington claiming essentiality for different types of civilian construction. Some of these appeals will be successful, others will not. Some will be fair appeals, whether or not they are granted. Others will have little claim to consideration.

All this implies that someone must have a yardstick of essentiality. What it will be is not yet known, but basically it must measure usefulness to our defense objectives. Beyond that there is the question of work that is essential to a healthy economy. It's all right to cut down housing construction, but if the labor and materials that are released can't be utilized on more essential construction, more housing becomes essential. What's essential depends largely upon what full production will provide.

At this stage of the defense program only a few broad generalizations as to essentiality are justified. Thus, projects that will produce power at some reasonable time in the future, can be declared essential. By the same token, racetrack construction can be called unessential.

But there are other classes of projects whose status may not be quite so clear, yet which nevertheless can exert strong claims to being essential—if not on an overall program basis at least for a large number of individual projects. One of these is highway construction. Mobility is necessary to defense—particularly in industrial regions and around major cities—and our highway net is far from adequate in this respect either in condition or extent. Another type of construction expenditure that has a top claim for continuance as a defense measure is that for stream pollution abatement. There are a good many streams that could not support industrial wastes from another new factory, others whose waters are so polluted that they could not be used for process purposes. The importance of cleaning up such streams is heightened rather than diminished by defense considerations.

Determining what's essential is not always going to be easy, but there are criteria available. The important thing is that they be sought out with an open mind both to defense needs and to the needs for a fully-employed economy.

Public Relations or Publicity?

DISCUSSIONS at the recent congress of the American Public Works Association regarding proper public relations for cities brings up a point on which we feel peculiarly qualified to speak.

Too often public relations is confused with publicity—getting "space" in the local and national press by any means possible, just for the sake of having the name of the city or the public officials in print.

Cities should adopt a strict interpretation of the words "public relations"—a means of making available the proper information in the best possible manner; of dealing with the press and public demand for information as courteously and completely as possible; of preparing information in the most easily understandable way. The emphasis always is on "information." Just getting publicity is not enough.

Perhaps both public relations and publicity are the wrong words, since they bring confusion. It might be better to follow the example of the Air Force, which recently stopped calling its Public Relations Officers by that title, now refers to them as Public Information Officers.

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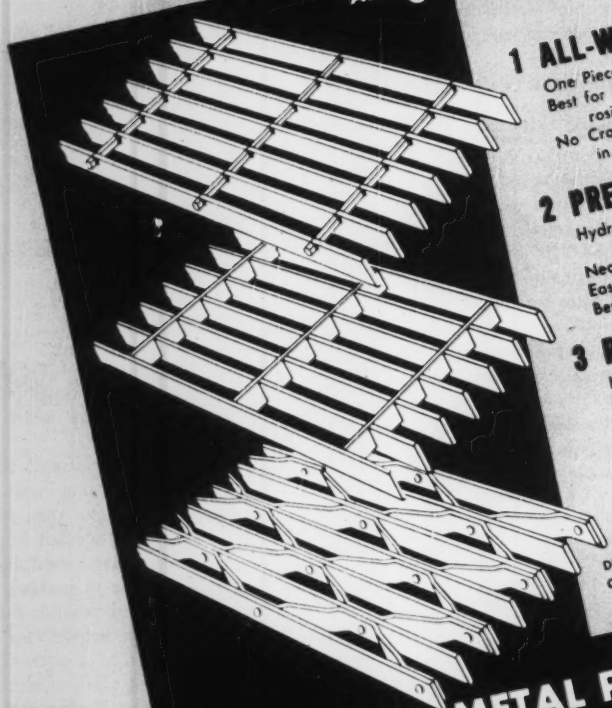

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ENGINEERING NEWS-RECORD

NOVEMBER 2, 1950 VOL. 145 NO. 18

Construction Jeopardized by NPA order, says AGC

Further restrictions, implied with "frivolous construction" directive, bring contractor protests; production authority's explanation does not improve situation

Contractors this week demanded further clarification of the National Production Authority's warning that it will—if necessary—stop construction work on any or all building jobs that do not further the National defense effort.

No investor or builder will risk money in a new project under such a threat, said H. E. Foreman, managing director, speaking for the Associated General Contractors of America.

The ominous warning came out last week as an unexpected addition to NPA's order M-4 banning new amusement construction (ENR Oct. 26, p 23).

It raised havoc with all future construction planning, as Foreman pointed out in a strongly worded telegram to NPA Administrator William H. Harrison. Until NPA issues a positive ruling as to what jobs will or will not be eligible for completion, Foreman declared, practically all new projects are in jeopardy.

As a partial sedative, Harrison came back the next day with an explanation that NPA intended to avoid stopping projects that would already be under way when and if the agency ordered any additional ban. But he immediately appended a crippling qualification: "We cannot give assurance that circumstances in the future will permit adherence to this policy."

• **Answer no help**—Harrison's answer leaves the construction industry "with as much confusion and as many uncertainties as before," Foreman said immediately afterwards.

The contractors now want to meet with Harrison and thresh out a clear-cut definition. Foreman emphasized that the M-4 policy is much more destructive than War II's famous L-41, which granted the right to complete projects once they had been approved upon application.

• **Follows ENR prediction**—In its prohibition of new "frivolous" construction jobs, order M-4 followed the lines predicted by ENR last week. Cost of jobs which are exempt from the order was increased to $5,000 in any consecutive twelve months.

At the end of a list of 44 types of prohibited construction the order has an all-inclusive item forbidding building for "any other recreational, amusement or entertainment purpose, whether public or private."

The order does not apply to projects of the Defense Department or the Atomic Energy Commission.

BULLETIN

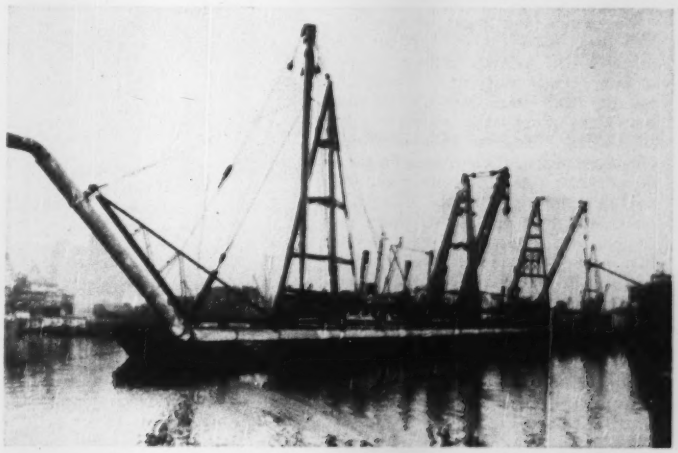
On Monday General Harrison told a construction group that he was appalled by the consequences foreseen for the M-4 order. He promised an early clarification that would permit legitimate projects to proceed without fear of curtailment.

Small-town housing project announced in New York

Two housing agencies—the state and the federal government—last week announced plans for new low-rent housing projects in the New York area.

Smaller of the two was an $846,000, 99-unit project of the Tuckahoe Housing Authority—the first of 11 similar planned projects in New York State outside New York City to reach bidding stage. The Tuckahoe authority will ask bids on the project Oct. 30, with opening scheduled for Nov. 29. The project is being built with the aid of funds provided by PHA under the Housing Act of 1949.

In New York City proper, the state Division of Housing and the New York City Housing authority jointly announced plans for a $17,200,000 development to be known as LaGuardia Houses, in the city's lower east side. The project will include a general neighborhood redevelopment program: Street widening, construction of parks and playgrounds, and development of marketing areas by private capital. Funds will come from the state, which will also pay about $599,700 annually for 50 years to aid in keeping rents to an average of less than $9 per room.



PIPELINE CROSSING—Traffic in New York's Harlem River was interrupted for six hours when three of Merritt-Chapman and Scott's big floating derricks picked up a 173-ton concrete-encased 30-in. pipe from its riverside assembly yard, swung it carefully cross-stream, and lowered it into a prepared trench 35 ft below the surface. Overall length is 568 ft. Pipe was stiffened during lift by steel trusses and strongbacks improvised from crane booms. Derrick spacing was maintained by spreaders between hulls. Pipe is part of natural-gas system described in ENR Sept. 14, p. 41.

NAHO hears work-drop forecasts

What happens to public housing during partial mobilization? For delegates to the National Association of Housing Officials convention, held in Detroit in mid-October, the answer seemed painfully obvious: Public building would be cut the same amount as private building.

If the 1400 local housing authorities from all over the country had any other ideas on housing's future, Deputy Administrator B. T. Fitzpatrick of the federal Housing and Home Finance Agency, and Commissioner John T. Egan of the Public Housing Administration quickly dispelled them. They reminded NAHO that Regulation X is an anti-inflation maneuver if private building has to be curtailed to conserve materials, so, too, will public housing. Already a cut in public housing units for the second half of this year has been made, from an original 50,000 to a current 30,000.

• **Rising costs restrict**—But even without this administrative cut in units to be built, public building is in for sharp curtailment. The NAHO meeting was darkened by the specter of rising costs as much as by the government's credit restrictions. Public housing is built under a cost ceiling per room of apartment of $1750, and in special cases, of $2500. Local officials reported themselves finding it next to impossible to stay under these limits. Thus, rising material costs are achieving a cut-back fully as effective as PHA's ruling.

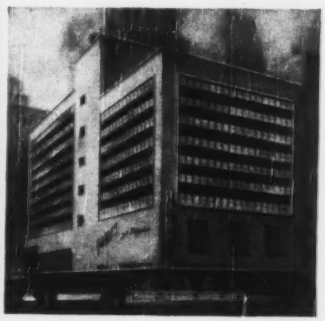
Fitzpatrick and Egan offered NAHO little hope for relief from this dilemma—the present ceilings would remain. They suggested, somewhat bluntly, that local housing officials have been rather lax in attempting to cut costs. Their recommendations: Choose low-cost site locations for public projects; cut frills from plans by stripping housing to its essentials; make sure that contractors' bids are competitive. Fitzpatrick pointed out that in one locality, a re-advertised bid brought in an offer $750,000 under the original bid, apparently because it was readvertised at a time when builders were looking for jobs.

Of 28 major seminars over a 4-day period, many centered on techniques of building—materials, equipment and design. Again, the theme was what substitutions could be made, or what could be eliminated in order to cut costs.

On only one topic did it appear that NAHO could feel free to move. N. S. Keith, director of HHFA slum clearance, said that the government contemplates no action to curtail redevelopment, since 12 to 24 months would elapse before cleared urban lands became available for construction work. In addition, PHA announced a new policy toward families forced to move because of slum clearance. Displaced tenants will be paid moving expenses and one month's rent in their new homes.

• **Downs criticizes dismay**—This concession scarcely lightened the pall of gloom at NAHO. Members wore looks of pained resignation to the cut-backs in their building plans, conceiving of Regulation X and high costs as another of many hindrances to achieving their goals of more homes for low-income families. They became slightly more optimistic when a private research analyst—James C. Downs, Jr. of Chicago—rapped them for their dismay.

Downs said that supply of materials in the economy is far better than the post-Korea rush to buy would indicate. He predicted that Regulation X would halt price rises, and even decrease them slightly. Downs agreed with private builders that the present credit restrictions are too severe—justified, however, in order to bring building down rapidly from its present high peaks. Downs forecast that the government would ease credit policies by Spring, barring all-out mobilization.



HOTEL BECOMES OFFICE BUILDING—Three department store buildings shown in architect's rendering will be the result of transformation of an old ten-story hotel building in downtown Houston, Tex. The old building, known as the San Jacinto Hotel, will be joined to a new twelve-story annex and made to appear as one continuous structure. According to Kenneth Franzheim, architect, the old building will be stripped down to its structural skeleton and then the new facing will be put on it to make it into a modern structure.

Separate-contract dispute charges go to N.L.R.B.

A government investigation into the Chicago lathers' strike and lockout (ENR Sept 21, p 30) was predicted following the filing of unfair labor practice charges Oct. 21 with the National Labor Relations Board.

They named Local 5, Chicago, and Local 56, Elmhurst, Ill., both AFL plasterers unions, as well as several union business representatives, and the Employing Plastering Contractors Association of Chicago and Cook County. The latter association comprises 34 contractors employing 2,000 plasterers and building laborers.

The charges accuse the unions and the association of refusing to plaster over work done by striking Local 74, AFL, of the Lathers Union.

Construction of thousands of houses in the Chicago area has been delayed since Sept. 7 by a dispute between the lathers and plastering contractors over the award of separate contracts for lathing work. For years plastering contractors have contracted for both lathing and plastering and then sublet the lathing work.

Railroads plan spending

The Chicago, Burlington and Quincy Railroad and its subsidiaries plan to spend $5,680,000 for rails and fittings. The C. B. & Q. will use $5,100,000 of this for 50,000 tons of rails and fittings. The Colorado and Southern Railway will get 4,000 tons and the Fort Worth and Denver Railway will get 1,600 tons of rails and fittings amounting to about $580,000.

Erie Railroad directors have approved $3,380,000 for maintenance-of-way improvements in 1951.

Kelly, ex-Chicago mayor was consulting engineer

Edward J. Kelly, engineer and former mayor of Chicago, died October 20. He was 74. He started as an axman with the Chicago Sanitary District in 1894, and worked his way up to chief engineer. In 1933, he became mayor. He served as chief city executive until 1947. During his Sanitary District service, Kelly was loaned to the State for work as Illinois Water Commissioner.

Under his regime as mayor, Kelly started the $40,000,000 subway program in 1938 and pushed through a $100,000,000 superhighway program. He was in private practice as a consulting engineer since 1949, and he was a member of the American Society of Civil Engineers, as well as of the Western Society of Engineers.

NIGHT AND DAY—Since last June, test trucks have been rolling back and forth on this section of concrete highway in Maryland. What they're trying to resolve is the perennial argument between engineers and truckmen: Whether overloaded trucks really damage highways. Results make it look as if the engineers are right—recommended load limits are real highway protectors. At left is shown one of the recommended-load trucks passing over a joint that contains a strain-gage. At right, foreign engineers watch testing procedure. Trucks make round trip in about four minutes. Eight trucks used in testing.

Full-scale tests validate load limits

Concrete pavement can take only so much pounding from heavy wheel loads. The heavier the axle loading, the faster the breakup of the slab. Those are observations that can be made by any visitor who takes time to look at the Highway Research Board's much-publicized road test in Maryland.

On its face, the project at the end of the first four months gives evidence that is damning to heavy axle loads. Up to Oct. 1, two single-axle trucks with rear-axle loadings of 22,400 lb (the Maryland limit) developed 542 ft of new cracks while traveling back and forth—for a total of 174,000 load applications—on their ½-mi test lane. In the parallel lane alongside them, two similar trucks with single-axle loads limited to 18,000 lb (a conventional recommended limit) caused only 82 ft of cracks under 136,000 applications.

Even more striking are the comparative results obtained by operating tandem-axle trucks of different loadings over parallel lanes on the other half of the project. Two trucks with the lighter tandem-axle load, 32,000 lb, caused 249 ft of cracking in nearly 84,000 trips. On the adjacent lane, another pair of trucks—each having a tandem-axle loading of 44,800 lb—produced 2,968 ft of new cracks in less than 82,000 applications, up to the end of September.

• Part of test stopped—Soon afterward, cracking in the more heavily loaded tandem-axle lane became so rapid—approaching 100 ft per day—that the Research Board stopped truck operation Oct. 13. By that time cracks in the lane totaled nearly 3,500 ft. The researchers wanted to preserve the few undamaged slabs and joints in this lane for further deflection and strain tests under intermediate loads between 32,000 and 44,800 lb. Traffic might be resumed on the lane after these tests are completed.

This evidence is impressive, but it needs qualification, as both HRB engineers and trucking officials point out. First of all, the project was set up to determine the performance of one particular stretch of pavement under different axle loads. The AASHO wants to run similar tests on other pavements, bituminous as well as concrete, with different subgrades under both reinforced and non-reinforced concrete slab. Only after the tests have been thus extended, the truckers say, will it be possible to determine fully the comparative effects of different axle loadings.

• Full report later—The present project is scheduled to run six months. Full operation with eight test trucks began June 23. The six trucks now in use are expected to continue operating until Dec. 23. Not until all the data have been assembled will the HRB project committee attempt to evaluate the information.

Highway departments of eleven states and the District of Columbia are financing the money cost of the project, and the Bureau of Public Roads is furnishing the technical personnel and instruments. Truck manufacturers supply the trucks, and the petroleum industry is contributing the gasoline and lubricants.

(Further observations on the Maryland test will be given in Engineering News-Record next week. These will pertain to conditions limiting the test's comparability with normal conditions, extent of maintenance during the test, subgrade pumping, subgrade soil types, pavement cross-section and other factors.—EDITOR)

Ohio court orders payment for turnpike engineering

Ohio Supreme Court has ordered State Auditor Joseph T. Ferguson to pay two engineering firms $27,500 each for surveys on the Ohio Turnpike project, or to show cause why he shouldn't. (ENR, Sept. 28, p26).

The high court granted alternative writs of mandamus at the request of J. E. Greiner Co., Baltimore, and Parsons, Brinckerhoff, Hall & Macdonald, of New York. The engineering firms contended they contracted in good faith for engineering surveys on the proposed superhighway across northern Ohio.

Saying that the highway department has no legal right to employ non-department engineers for such surveys, Ferguson wants the court to rule on the constitutionality of Ohio's turnpike law.

Aids to post-college training planned by professional development group

Engineers' Council for Professional Development hears extension course plans; program revitalization stressed.

More and better facilities to permit young engineers to continue their professional training after graduation from college are planned by the Engineers Council for Professional Development. Preliminary plans for this new undertaking were laid before the council at its annual meeting at Cleveland, Oct. 20-21.

These plans were prepared by the council's Committee on Professional Development, which is headed by A. C. Monteith, vice-president in charge of engineering and research of the Westinghouse Electric Corp., Pittsburgh. Civil engineers are represented on the committee by Don P. Reynolds, assistant to the secretary, American Society of Civil Engineers.

A typical example of the type of program that the committee hopes to encourage is found in Milwaukee, where, through the efforts of the Engineer's Society of Milwaukee, the University of Wisconsin has established an extension center at which graduate engineering courses are offered in the evening under both instructors from the university and lecturers from industry.

• **Five-Year test period**—Employment of well qualified man on fulltime basis for five years is proposed by the committee. As a member of the ECPD staff he would start working in areas where conditions are favorable to the establishment of evening training courses for young engineers under the sponsorship of local engineer groups.

The cost of doing this is placed at $20,000 a year, most of which, the committee believes can be obtained from industries and from philanthropic foundations.

This year the ECPD executive committee asked each of the organizations represented on the council to add a few hundred dollars to its appropriation for ECPD to facilitate this work. It also asked the Engineering Foundation for an extra grant of $5,000 for the same purpose. At the Cleveland meeting approval of the added grant from four societies was announced, with a fifth grant assured.

The ASCE board, at its meeting in Chicago earlier in October voted not to make the extra grant on the recommendation of its executive committee. The latter recommended "against expansion of ECPD activities requiring additional funds until such time that the ECPD and its relation to the Founder Societies shall have developed further and an approved future position of ECPD determined." [At that time the ASCE board had received no details of the program proposed by the Monteith committee—Editors]

• **Revitalized ECPD programs**—Harry S. Rogers, chairman of ECPD, took this action of the ASCE board as text for an impromptu departure from his prepared report at the council's annual dinner meeting.

Except for the magnificient job that has been done by ECPD in accrediting courses at engineering schools and some good work in the preparation of manuals for young engineers and guidance literature for high-school students, Chairman Rogers said that ECPD has accomplished little toward implementing the program that the founders established 18 years ago.

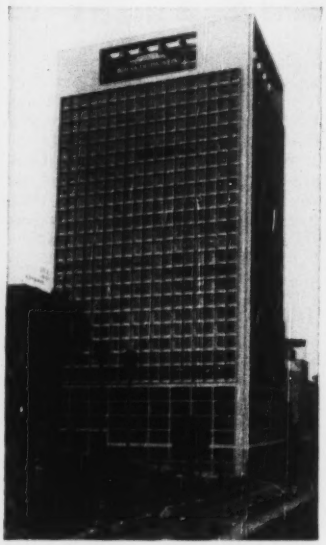
Revitalize the ECPD program was begun over a year ago by James W. Parker, then chairman of ECPD, who believed that the field of post-college training for young engineers was one in which ECPD could render the greatest service at this time. To that end he persuaded men experienced in the operation of industrial training programs to undertake development of a program to help young engineers to continue their professional training after they graduate from college.

The program now proposed by the Monteith committee, Rogers said, is their answer. Of necessity it is still indefinite, he added, but if the boards of the sponsoring societies are not willing to put up enough money to get it started, then they should disfranchise ECPD and not ask the men they have placed on ECPD to spend their time on trifling tasks. ECPD's accrediting work, he said, could be turned over to the American Society for Engineering Education.

• **Accrediting engineering courses**—Accrediting of engineering curricula has been continued actively by the Committee on Engineering Schools during the past year. S. C. Hollister, chairman, reported that 264 curricula were inspected, of which 74 were inspections of new courses and 190 were reinspections. Of the former, the committee recommended to the council that 35 be fully accredited, that 18 receive provisional accrediting and that accrediting be refused to 19. Action on two was deferred. Among the courses reinspected the commitee recommended that accrediting of 152 be continued, that accrediting of 33 others be continued provisionally for two years, and that the accrediting of four curricula be withdrawn. These recommendations were approved by the Committee.

• **Charter revised**—A revised charter for ECPD, designed to clarify its objectives and facilitate its operations, was approved at the meeting for transmission to the seven sponsoring societies for approval.

Harry S. Rogers, president of the Polytechnic Institute of Brooklyn, was reelected chairman of the council and L. F. Grant of Queens University, Kingston, Ont., was reelected vice chairman. Mr. Rogers also was named a representative of ASCE on the council to succeed Albert Haertlein. The other ASCE representatives are Frank C. Tolles and V. T. Boughton. Wm. N. Carey, secretary of ASCE was elected secretary of ECPD for 1951.



REINFORCED CONCRETE GIANT—From the drawing board of Brazilian architect Lucian Korngold, this "Edificio Esplanada" in Sao Paulo is being built to furnish more than a half million square feet of floor space. The 31-story building was begun in 1948; it is to be completed soon by Soc. Comercial e Construtora de Sao Paulo. While this building is said to have the largest floor space in Sao Paulo, it will not be the tallest. The Banco do Estado de Sao Paulo is 34 stories high (ENR Sept. 2, 1948, p. 72) but it has only 220,000 sq ft of floor.

CONSTRUCTION BUSINESS

Lumber prices tumble in October

The slip in lumber prices that started mildly in late September, really hit the skids during October. The drop is 7-8% as measured by the 20-cities average computed monthly by ENGINEERING NEWS-RECORD. But this includes seven cities in which lumber prices held during the month.

The most sensational price collapses were in lower grades, but for the sized-and-surfaced grades reported by ENGINEERING NEWS-RECORD fir dropped $7.50 at the mill in Seattle to $82.50, pine dropped $10-10.50 at the mill to $67.50 in Atlanta on 2-in. material, $15-16 on 1-in. boards.

At consuming points the price skid range is a little wilder. At Cleveland, Chicago, Detroit and Pittsburgh 1-in. pine is down $10-18, 2-in. pine down $2-22, 1-in. fir is down $5-21 and 2-in. fir down $4-24.50 per M.

At New York delivered lumber is down $9-18 for 1-in. pine, $5-15 for 2-in. pine and $10 for 2-in. fir. Philadelphia prices were holding when checked. Baltimore prices are down $7.50 on 1-in. pine, $9 on 1-in. fir, $5-7.50 on 2-in. pine, $9 on 2-in. fir.

West of the Mississippi prices were holding when checked at Dallas and Minneapolis but Minneapolis expected them to topple soon. Denver has no 1-in. material to quote on but 2-in. fir is down $17. St. Louis lumber is down $13-16.25 for 1-in. pine but has no 1-in. fir, 2-in. pine is down $3-16.50 and 2-in. fir is down $14.50.

In San Francisco prices were holding while stocks held but then were expected to go down along with the lower prices in Northwest mills. Los Angeles 1-in. fir is down $5 and 2-in. is down $7 per M.

The pressure on lumber has been easing steadily for two months. New orders have run below production every week since Aug. 5 with one minor exception. For the week ending Oct. 14 orders were 19.6% below output, in other recent weeks they have rather consistently run 10-17% below. The New York Times reports that many retailers are invoking the National Production Authority's inventory control regulation to cancel orders placed previously sometimes as much as a year ago but not shipped.

Plywood prices stay high

Plywood prices skyrocketed a little faster this year than lumber and almost as high. In the heavy form grades the ¾-in. sheets are up 37.9% since January, ¾-in. plywood up 32.3% on their Seattle base. (Lumber 2x4s used in the ENR cost indexes went up 38.3% before this month's drop, now they are 29% higher than in January).

Plywood, however, shows no immediate signs of backing down. The Seattle base for ⅜-in. is $200 per M sq ft surface, ½-in., $225, for special concrete form grade fir plywood 4 ft x 8 ft panels.

Mass housing contracts at year's low in October

The bottom dropped out of mass housing contracts this week as reported to the CONSTRUCTION DAILY. Only $19,314,000 is added to the score for the year which has averaged $66 million a week up to now. This brings the October average down to $35 million a week, the lowest for any month this year.

The high week for the year is $128.1 million for the first week in April with a second high of $122.9 million for the last week in February.

The high month for this record year is June with an average week of $92.8 million. This tapers off to $63.2 million in July, $58.4 million for August, $48.8 million for September, and now the $35 million average for October and the low $19.3 million for the last week of October.

At the end of June this year mass housing contracts were running 125% higher than corresponding awards last year. At the end of September they were running 100 above last year, but by the end of October they are running 96% ahead. Last year housing was on a rising trend, building up to the phenomenal boom recorded this year. This fall the trend is down, with credit curbs expediting the skid from the stratospheric heights of spring and summer.

Construction employment dips; Sept 10% above 1949

September's 2,572,000 figure of contract construction employment is down 39,000 from August's peak of 2,611,000, but 51,000 above July, the Bureau of Labor Statistics estimates.

September of this year finds contract construction employment 10% above the same month last year, and 8.5% above September of 1948.

Kentucky cities would build industrial plants

Twenty cities of Kentucky are looking for firms of good credit standing for whom to build new industrial plant with funds raised through newly permitted city revenue bonds.

Now that the state Court of Appeals has given the city of Danville the green light for its already successful $300,000 bond flotation to construct a city-owned plant for lease to the General Shoe Corp, the eyes of the whole state are turned in the direction of municipal money for local industrial expansion.

Looking for new industries to finance under the 1946 state law permitting municipalities to issue bonds for industrial construction backed only by rental revenue from new plant facilities are the following cities: Paintsville, Elizabethtown, Columbia, Corbin, Stanford, Pineville, Harlan, Nicholasville, Ashland, Cleverport, Vanceburg, Carlisle, Lexington, Salt Lick, Leitchfield, Franklin, Paris, Mt. Vernon, and Barbourville.

All these cities would like to build new facilities for the "right" company seeking new plant and low overhead costs. Aiding them is the state Chamber of Commerce.

When Danville proposed last summer to take advantage of the state law to build General Shoe a larger plant than its local 70-employee training facility, E. P. Faulconer, a private citizen, asked for an injunction and declaratory judgment invalidating the 1946 law.

Decision of the state Court of Appeals in favor of the Danville project has opened the whole state of Kentucky to this method of municipal construction for lease to business.

Steel exceeds itself again

More steel was made last week than ever before, according to the American Iron and Steel Institute. This was the fifth consecutive week in which steel output has exceeded itself.

Schedule for production are 1,978,000 tons of ingots and steel for castings, an increase of 11,600 tons over the record output of last week.

Reports from companies having 94% of the steel capacity of the industry indicate the industry will produce at 102.6% of capacity for the week beginning Oct 23. This compares with output of 166,000 tons one year ago during the steel strike.

This will be the sixth consecutive week steel furnaces will have operated at 100% or more of capacity, and the eighteenth week in 1950 they have done so.

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 74, went to press.)

Gas Pipe Line—Union Gas Company of Canada, Ltd., Chatham, Ont., awarded contract for steel for 63 miles pipe to storage fields near Madonfield, Ont. to Steel Company of Canada, Hamilton, and for laying pipe to Shaw Construction Co., Ltd., Sarnia. Total estimated cost $3,000,000.

Rural Electrification Program—The Puerto Rico Water Resources Authority, San Juan, plans four-year electrification program to cost $6,000,000.

Housing—Farnsworth & Chambers, Inc., Houston, Tex. has been awarded $3,192,257 contract for housing project in Little Rock, Ark., by the Little Rock Housing Authority, Little Rock. Wittenberg, Delaney & Davidson, Little Rock, are architects.

Gas Pipe Line—Niagara Gas Transmission, Ltd., Toronto, Ont., plans constructing 85 mile gas pipe line from Niagara River to Port Credit in Ontario, to import gas from Texas. Estimated cost $6,000,000.

Coke Ovens—Koppers Engineering & Construction Division, Koppers Co., Inc., Pittsburgh, Pa. will build a battery of thirty coke ovens at the Birmingham plant of Sloss-Sheffield Steel & Iron Co., Birmingham. Cost will be about $2,000,000.

Bridge—Wasco County, The Dalles, Ore. plans bridge over Columbia River, at Covington Point. Estimated cost $2,400,000. Tudor Engineering Co., San Francisco, Calif., is consulting engineer. Christ Fauerso is county engineer.

Woolen Mill—Daniel Construction Co., Greenville, S. C., will construct a woolen mill at Columbus, N. C., for Deering Milliken & Co., Inc., New York. Cost will be about $2,000,000.

Schools—City of East St. Louis, Ill., will vote Nov. 18 on $2,995,000 bonds for school construction.

Retail Store—Stoneson Development Corp., San Francisco, Calif. will construct a retail store in San Francisco by their own forces to cost $2,000,000. Welton Becket, Los Angeles is architect. L. F. Robinson, San Francisco, is engineer.

Water Mains and Appurtenances—Water Department, Oklahoma City, will open bids Nov. 14 for 110 mi 6- to 30-in. cast iron mains and appurtenances for water supply system. Cost is about $2,100,000. C. E. Bretz, Oklahoma City, is engineer.

Road—California State Division of Highways, Sacramento, awarded contract for improving 4.2 miles road in Alameda County to Fredrickson & Watson and M & K Corp., Oakland, at $2,871,212. G. T. McCoy, Sacramento, is highway engineer.

Oil Pipe Line—A $7,000,000 section of oil pipe line has been awarded to Williams Brothers Co., Tulsa, Okla., by the Plantation Pipe Line Co., Atlanta, Ga. Line will run from Louisiana through Mississippi, Alabama, Georgia, South Carolina to North Carolina. Moscowitz, Willner & Millkey, Atlanta, Ga. are engineers.

New Jersey Turnpike—New Jersey Turnpike Authority, Trenton, N. J., received low bids Oct. 27, for section of turnpike in Salem and Gloucester Counties from Eastern Engineering Co., Atlantic City, N. J. bidding $6,217,725 on bituminous concrete. And from B. Perini & Sons, Inc., Framingham, Mass., bidding $7,072,059 on portland cement.

State Office Building—State of Tennessee, Nashville, will open bids Dec. 5 for the construction of a state office building in Nashville. Cost is estimated at $6,000,000. Hart & McBryde, Nashville, are architects.

Gansevoort Destructor Plant—Merritt-Chapman & Scott Corp., New York, will construct the $4,446,191 Gansevoort Destructor Plant, in Manhattan for the New York City Department of Public Works.

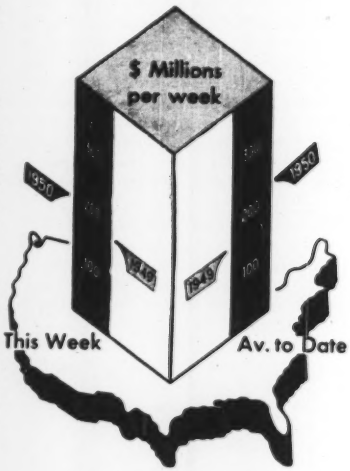
Bond Elections—City of Louisville, Ky. will hold election November 7, to vote $5,000,000 bonds for major street and traffic improvements, $2,850,000 for grade crossing eliminations and $1,500,000 for recreational facilities. George Barton, Chicago traffic Consultant drew up plans for improving 135 miles streets and grade crossings and DeLeuw, Cather & Co., Chicago, made studies for Railroad Planning Commission.

Sewage Treatment Plant—Thirty sets of figures were received Oct. 23 by the City of Roanoke, Va. for sewage disposal plant and interceptor sewers, which will cost about $4,050,000. E. and F. J. Pfotzer, Washington, D. C. was low on the treatment plant at $1,546,260. Alvord, Burdick & Howson, Chicago, Ill., and Mattern & Mattern, Roanoke, Va. are consulting engineers.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926	1949
Constr. Cost.	Oct. '50	534.44	256.91	112.03
Bldg. Cost.	Oct. '50	396.23	214.19	112.63
Volume	Sept. '50	390	171	139



Activity This Week

As reported to ENR (in millions of dollars)

Amount of contracts let

	Week of Nov. 2, '50	Cumulative 44 wks. 1950	1949	% chge
Federal	$23.4	$1,035.7	$897.4	+15
State & Mun.	86.4	3,186.1	2,704.8	+18
Total Public	$109.8	$4,221.9	$3,602.2	+17
Total Private	89.9	5,892.8	3,272.4	+80
U. S. Total	$199.7	$10,114.7	$6,874.6	+47

Contracts by type of work

	This Week	Cumulative 44 wks. 1950	1949	% chge
Waterworks	$2.2	$193.3	$182.0	+6
Sewerage	17.2	246.5	231.2	+7
Bridges	5.8	324.2	293.8	+10
Highways	18.0	1,083.1	800.7	+35
Earthwork, Waterways	10.2	347.5	452.7	−23
Buildings:				
Public	13.5	1,402.4	1,037.6	+35
Housg., pub.	39.9	297.6	339.6	−12
Housg., priv.	30.7	2,817.3	1,480.1	+90
Commercial	20.5	844.3	509.0	+66
Industrial	28.6	1,395.3	859.8	+62
Unclassified	13.1	1,163.1	688.1	+69

NOTE: Minimum size projects included are: Waterworks and waterway projects, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

New capital for construction

	Cumulative 44 wks. 1950	1949	% chge
NON-FEDERAL	$522.0	$432.5	+21
Corporate Securities	1,864.1	1,979.1	−6
State and Mun.:			
Excl. housing	1,873.6	1,857.2	+1
Housing	560.7	706.3	−20
FEDERAL	2,829.1	1,711.7	+17
Total Capital	$7,649.5	$6,686.8	+14

Elections seek OK on $1 billion bonds for schools, hospitals and roads

Schools, hospitals, streets would get major part if voters approve —public buildings, sewers high on list as communities plan services

More than $1 billion—worth of municipal and state bond issues—most of them to finance construction—are up for citizen approval this November 7.

Across the U. S. municipalities, counties and states have plans for new and better school buildings, bigger hospital facilities, increased highway mileage, new streets, new waterworks, and a host of public buildings that can come into being only if the public calls for them.

Reports from half the nation give ENGINEERING NEWS-RECORD a cross sample of the building plans and dollar borrowing which public officials will present to their taxpayers for approval.

• **Golden Rule first**—Reports from over 24 states indicate that more than half the borrowing may be used to put Junior through school. After learning, the weight of the ENR sample falls on bond issues earmarked for the health of the people, and then in order of their dollar volume, come streets and highways, sewerage and waterworks.

Unclassified, but far from insignificant, is a huge dollar volume devoted to projects such as swimming pools, airports, subways, police stations, fire houses, jails, parks, town halls, court houses, libraries, fair grounds, zoos and garages.

Biggest bond issues reported included the State of Washington's ambitious plans for its schools and colleges. Two bond issues will be placed before citizens to provide $40,000,000 for schools, $20,000,00 for colleges and the state university. For charitable and penal institutions of the state, citizens will "x" a bond issue amounting to another $20,000,000.

Michigan's various hospitals need expansion and increased facilities. For the care of its sick, the state public is being asked to approve $65,000,000.

• **Even in thrifty New England**—Rhode Island is borrowing. In order to have new highways for their cars, voters must ok a $12,000,000 issue devoted to better and more highways.

Austin, Tex., has plans for a $20,000,000 bond issue, half of which would go into schools, to provide new buildings and enlarge existing plant. The remainder would be heavily devoted to new sewerage and waterworks.

Philadelphia, Pa., is asking voters to approve new borrowing for two subway extensions. The total issue is in three parts. The tally, $15,850,000 of which a $1,600,000 segment is for street improvement.

• **A national pattern**—Like the rest of the nation, St. Paul, Minn. plans to spend half the money it borrows on schools. An $18,600,000 issue is up for approval in that city, half for schools, the rest divided between new public buildings and the maintenance and improvement of existing public facilities.

• **Diversity in Cleveland**—Thirteen different projects are up in Cleveland, Ohio. The variety includes $4,000,000 for the municipal airport, and several bond issues of $2,000,000 or more for streets. All told citizens will review $19,100,000 worth of bond issues.

In Kentucky's famed Louisville the streets and roads need care. The voters of that city will have a place on their ballot to approve $13,350,000 worth of new streets, overpasses and parks.

Lewis County, Wash., plans $7 million hydro project

The Lewis County Public Utility District of Chehalis, Wash., expected an engineering report by Nov. 1 on proposed construction of a $7,000,000 hydroelectric project at Packwood Lake, some 85 mi. east of Chehalis.

The report—if favorable—will be the basis of an application to the Federal Power Commission. It is being compiled by W. S. McCrea, consulting engineer of Tacoma. Tentative plans call for construction of an 80-ft. dam at the lake outlet, with a large steel pipeline to a power plant producing an average 24,000 kilowatts, with a peak capacity of 33,000 kilowatts. Head would be 1600 ft. for a single-stage or 800 ft. for a two-stage plant. A transmission line would be constructed some 35 mi. to Morton, where it would feed into a Bonneville line serving Chehalis.

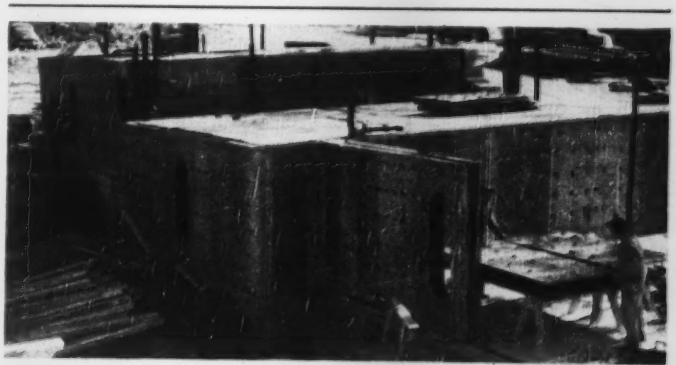
Cost of the project could be reduced to as little as $4,000,000 or increased to $12,000,000 by decreasing or increasing its scope. Capacity of the plant could be increased by diverting water from a number of creeks in the area.

Planning loan program heads in new direction

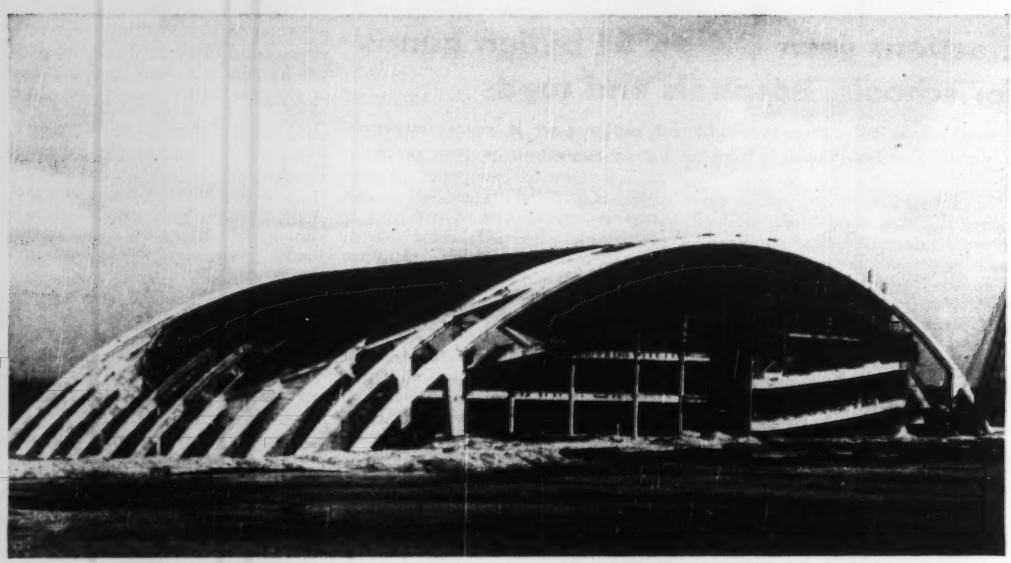
The federal Housing and Home Finance Agency's advance planning program for non-federal public works is being redirected to relate it more directly to the defense program, according to Administrator Raymond M. Foley.

Foley explained that the action, taken after consultation with the Bureau of the Budget, is in line with the President's direction that all civilian public works programs be reviewed and limited to defense needs and essential civilian requirements.

These additional criteria have been established to govern future advances: (1) projects should contribute directly to defense operations; (2) projects should meet essential and immediate civilian requirements.



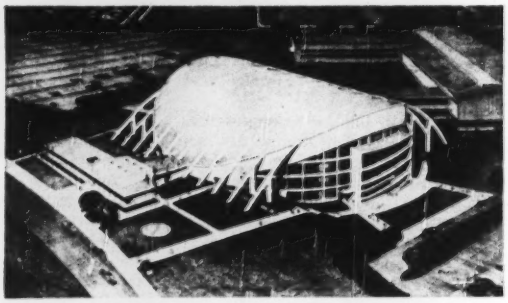
FAST CONCRETING for houses in Atlanta's Lakemore apartment project is achieved with the aid of form units that allow monolithic wall and ceiling construction. Plumbing and electric installations as well as reinforcing and frames for openings are incorporated in forms before pour of a foamed concrete. Wall forms are stripped after 18 hours, re-used 15 to 20 times. Twenty-one buildings containing 104 apartments and 108 garages have unit cost of $6.50 a square foot. This FHA-financed job was designed by Wiley L. Moore and Assocs., architects.



Slender arch ribs of reinforced concrete spanning 286 ft support . . .

Cylindrical roof for circular coliseum

Boyd G. Anderson
Associate Partner
Ammann & Whitney, Consulting Engineers
New York, N. Y.



WHEN FINISHED, the coliseum will look like this.

IMAGINE two football playing fields under one roof without a single column obstructing them. Their area would be equivalent to the unobstructed floor area of Alabama's livestock coliseum in Montgomery.

But more remarkable than this large open space is the unusual combination of reinforced concrete roof framing and walls. The roof framing consists of 375-ft long arch ribs, whereas the exterior wall follows a 340-ft dia circle. As a consequence, where the vertical cylinder formed by the walls intersects the roof shell, which is part of a horizontal cylinder, an edge beam curved in two directions results.

Justification for this unique arrangement rests in conservation of space. There are no hard-to-fill corners, as in rectangular buildings, and about 85% of the seats are concentrated in the "50-yd line zones." Vision is not obstructed by structural columns.

• **Thin shell roof**—Except for a narrow band at the edges and ends, the concrete roof shell is only 3½ in. thick. The thickness increases gradually over a distance of 4 ft to 5½ in. at the ribs and over a distance of 20 ft to 6 in. at the lower edges.

The arched shape of the shell provides clearance for the stands, which rise 70 ft on each side of the 260x130-ft central arena. The distance from floor to high point of roof is nearly 100 ft.

Shell reinforcement consists of a light grid of ½ and ⅝-in. round bars. These were placed near the bottom of the slab, both parallel and perpendicular to the ribs. Supplemental top bars were inserted near the ribs and in the region of the edge beam.

Following the line of intersection of roof and wall cylinders, the edge beam curves in two directions. It stiffens the lower edges of the slab, serves as a gutter for rainwater and acts architecturally as a cap band for the building wall below.

Except for small areas cantilevering from the grandstand structure at the ends of the coliseum, the barrel roof is completely independent of both the wall and grandstand. Both during and after construction, the support and stability of the shell depends entirely on the 11 slender ribs.

Cane-fiber insulation board, 1-in. thick, covers the entire barrel. The boards were mopped down between continuous 1x2-in. wood strips anchored to the concrete shell between ribs. Above the insulation is three-ply built-up roofing, the two lower plies of which were nailed to the wood strips.

Insulation board and roofing also cover the ribs, which were provided with wood nailing strips on sides and tops for fastening purposes. Copper

flashing is used over rib construction joints and at the edge beam.

• **Long-span ribs**—Spaced 28 ft 4 in. on centers, the ribs spring from footings 375 ft apart. They also are supported at two intermediate points (286 ft apart, on 50-ft high, monolithic, vertical legs. All the arches were given the same curvature, span and dimensions to permit multiple use of the movable formwork. Rib reinforcement is symmetrically placed at top and bottom, and all main bars are tied.

Alternate arches consist of two half ribs separated by ½ in. cane-fiber insulation board. This joint facilitated the pouring operation, since two bays were cast at a time. It also divides the barrel into short lengths longitudinally, so that expansion and contraction may occur freely in the separated double bays.

The vertical legs supporting each arch and the parts of the ribs between the legs and the rib footings form a frame at each end that supports and restrains the central part of the arch. In effect, the exterior portions of the ribs are the inclined legs of the frames. These inclined legs take nearly all the thrust. The vertical legs primarily furnish buckling stability to the rib and resistance against lateral loads.

Four lines of continuous footings support the inclined and vertical frame legs, the rib footings being sloped to distribute the thrust. They rest on a sand base that was stabilized with cement for construction purposes.

• **Design loads**—The roof was designed for dead load, a 25-psf live load and a distributed 125-mph wind load. It was also proportioned to withstand internal stresses caused by a ±35 deg F temperature change, shrinkage equivalent to a temperature change of −15 deg F, an abutment motion caused by anticipated settlement of the outside frame legs, and deflection stresses due to elastic and plastic deformation of the ribs.

Because the shell is circular in plan, the various arches sustain different loads. Those nearest the center of the building, on which the sum of dead and live load is greatest, are shaped to follow the dead-load pressure line. Consequently, since all the ribs have the same shape, the arches near the ends are subjected to greater dead-load moments. Each rib was designed for its particular loading conditions.

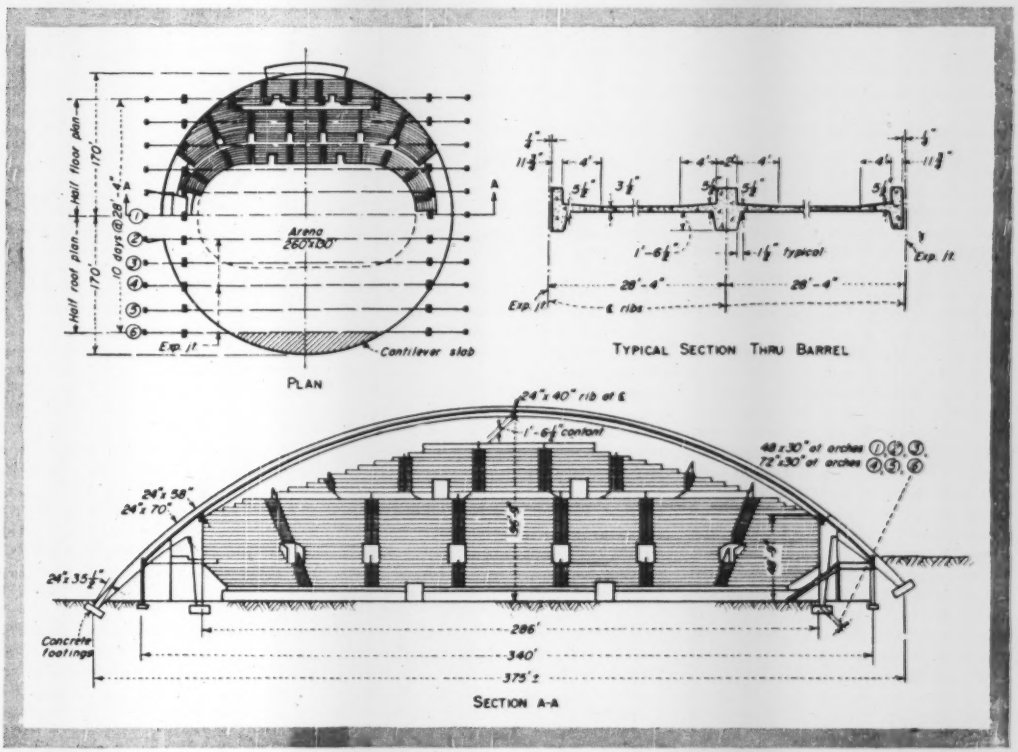
For design purposes, the arches were first considered fixed at the point of juncture with the frame legs. Ribs and frames were then analyzed separately and moments balanced according to elastic relationships.

• **Critical rib loadings**—The ribs were designed for limit-load combinations including those given by Eq. 1(a) or 1(b) and Eq 2(a) or 2(b):

$$M = 1.2(B + L/2 + 2W) + S \quad 1(a)$$
$$M = 1.2(B + 2L + W/2) + S \quad 1(b)$$
$$M = 2.0(B + L + W/2) + S' \quad 2(a)$$
$$M = 2.0(B + L/2 + W) + S' \quad 2(b)$$

M is the moment due to the combination of loads; B the moments due to dead load, temperature changes, rib shortening and abutment rotation; L the live-load moments, W the wind-load moment, and S and S' are deflection moments.

Eq 1 represents a realistic variation of probable load combinations. In contrast, Eq 2 is a theoretical combination giving better rib proportions for high thrust loadings. Even more important, Eq 2 keeps the stresses due



COLISEUM ROOF is a circle in plan and an inverted catenary in section. The outer part of the arch ribs and the vertical legs form frames that support the central part of the arch. All the ribs have the same shape.

to the working loads within a range where cracking will not affect either the sightliness or the durability of the ribs.

The *B* effects have the common characteristic of being fairly predictable. Therefore, they are not expected to exceed the range of the 20% variation described by Eq 1. However, the assumption that dead-load moments will not vary more than 20% must be applied with caution to arches shaped to follow the dead-load pressure line.

For the coliseum arches, the theoretical dead-load moments are very low. Small errors in the dimensions of the rib and shell, therefore, might cause an unsymmetrical distribution of load and result in appreciable additions percentagewise to the bending moments. The additional moments were controlled, however, by maintaining design dimensions within specified small tolerances.

The relatively important deflection moments, S, were computed for the ultimate-load condition defined by Eq 1. For any lesser load than the ultimate, secondary stresses will be materially less due to the nonlinear increase in deflection stresses with increase in moment.

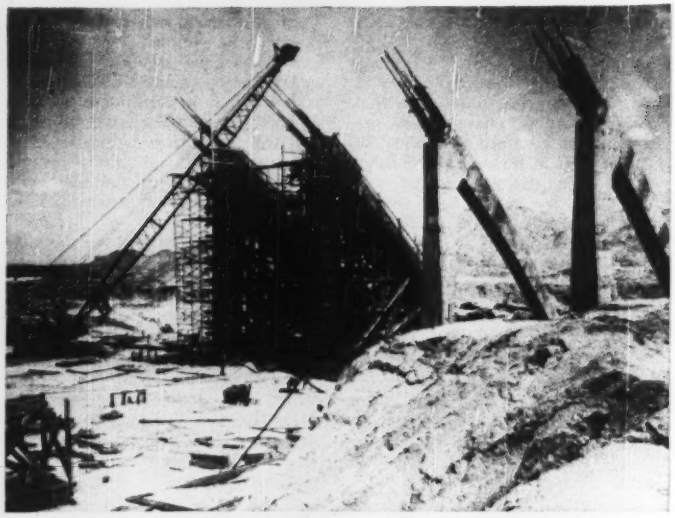
• **Footings loads**—Most of the thrust of the arches is carried by the footings for the inclined legs of the frames. Footings for the vertical legs carry only a small amount of the barrel thrust, functioning mainly to stiffen the ribs laterally. All four lines of footings were designed as continuous beams supported on an elastic foundation.

The possibility of high-intensity winds during construction furnished an important design condition for the vertical legs and hence also for their footings. It was necessary that each construction stage be investigated for winds from any quarter.

Soil conditions were favorable throughout. The footings bear on a deep sand bed with sufficient cementitious materials to form a hard surface. The maximum footing pressure considered permissible was 3.9 tons per sq ft, and the footings were kept near the surface—in some cases within 7 ft, despite the large horizontal and vertical thrusts.

• **Shell loads and stresses**—The shell was designed according to the elastic theory for short barrels. But certain corrections were made to account for expected plastic action.

Design loads included the weight of concrete, insulation and roofing; a 25-psf live load and the important volumetric stresses. The effect of deformations of the relatively light ribs was also considered and included in the computations. A minimum factor of safety of about 4 was maintained against buckling instability.



CONCRETE FRAMES that support the ribs were cast first. Forms for the bottom of the inclined leg and the outer face of the vertical leg were carried on a movable falsework, whereas forms for the other faces were large removable sections.

Because of the circular plan, the lower edges of the shell vary in direction from more or less perpendicular to the ribs in the middle bays to an acute angle at the end bays. These varying end conditions cause a complex pattern of stress distribution in the shell, requiring a separate analysis for each bay.

Concrete was required to have a strength of 4,000 psi in 28 days and steel a yield point of 40,000 psi.

• **Rib construction**—The frames supporting the arches were constructed with a movable falsework, which acted as the bottom form and support for the inclined leg, and as bracing and form for the outer face of the vertical leg. Forms for the other sides of these members were large removable sections.

Before concrete was placed, these sections were set on the movable form, aligned, braced and tied. They were removed after the concrete had set and before the sliding form was moved to the next position. A set of falsework for forming two frames was provided for each side of the concrete building.

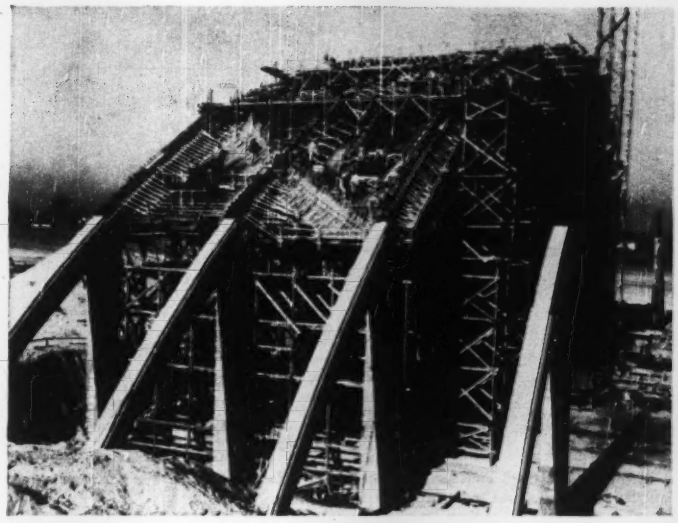
Before erecting the barrel falsework the contractor built a small-scale model to check the assembly and clearances. After that, he laid the falsework on the ground at the carpentry fabricating shop. The timber pieces were then assembled into small units and hauled on sledges by truckcrane to the position of the first pour, where they were erected by the crane.

The plywood, which was used to form the bottom surface of a double bay, was supported on 3x6-in. purlins. These spanned between ten lines of trusses placed parallel to the arch span. Each line contained nine independent short trusses.

The ends of each truss were supported by short jacks, which in turn rested on vertical 6x8-in. posts extending upward from a timber mat on the ground. The posts were braced in groups of four to form towers, which provided the necessary lateral stability and strength. The framing was designed to resist a 100-mph wind load as well as the vertical dead and construction loads.

Removable 1x6-in. sheathing formed the sides of the upper part of the ribs. Dimensions of ribs and slab were controlled by wood strips nailed along the inner side of the rib forms and by screed strips extending up the shell.

After each pour, the contractor lowered the trusses gradually from the center line toward the springing line by successively releasing the short jacks under each truss. When the form was clear of the concrete barrel, he inserted long jacks to remove the upper falsework weight from the short jacks, which then were removed. The long jacks were used to lower the falsework superstructure to the traveling position. Next, the entire falsework was lowered until a flanged car wheel beneath each tower engaged continuous 70-lb rails.



MOVABLE FALSEWORK carried the forms for the barrel and the arch ribs. Forms for the edge beam, which follows the intersection of the roof shell and the circular building wall, curved diagonally upward across the shell form.

With the weight riding freely on the tracks, the structure was moved by two cranes. Placed well back from the falsework, these cranes were connected to it by means of a bridle having two dividing lines attached toward the rear of the falsework framing.

• **Casting the roof**—The aggregates for the 4,000-psi concrete were batched at a temporary plant located at a nearby siding and trucked to two 2-cu yd paving mixers at the front of the falsework. Each mixer fed a 1-cu yd trip bucket in a hoist attached to the framing. The bucket, in turn, emptied into a hopper, which could be moved to each of three runway levels as the pour progressed up the barrel. Finally, the concrete was distributed to the barrel in buggies that dumped into short, sectional chutes.

Regular portland cement, rather than high-early, was used for the shell concrete. Though the construction cycle was slowed, this procedure helped reduce shrinkage cracking. The slab was found to be virtually watertight under heavy downpours prior to the application of built-up roofing. Of course, other factors, such as the use of a low-slump (2-in.) concrete and immediate application of a sealing compound, also played an important role in bringing about this condition.

All concrete was compacted with internal mechanical vibrators. Shortly after the finishing operations were completed, exposed surfaces of shell, ribs and edge beams were sealed by spraying with a curing compound.

Time of pouring ranged from about 26 hours for the first pour to 10 hours on the later ones, as the operation became systematized.

• **Deflections measured**—To check deflections the contractor established a series of survey points on the barrel and arch frames. Vertical readings were taken at the arch center line, the arch quarter points and the frame legs. Also, horizontal readings were taken on the legs.

Discounting the last shell pour, which was decentered just prior to the time of the last survey report, the rib deflections averaged 0.23 ft at the center line and 0.115 ft at the quarter points. The computed short-time deflections used in the falsework camber calculations indicated an expected deflection due to rib shortening, bending and yield of the soils of 0.21 ft at the center line and 0.125 ft at the quarter points. While extreme accuracy in predicting deformations is not possible because of necessary assumptions, the results indicate that the elastic theory may be used to make reasonable approximations of both the elastic and inelastic deformations.

• **Bidders preferred concrete**—In view of the importance of the structural framing on this project, comparative designs were made with structural steel and with reinforced concrete framing. These designs were offered as alternate plans to the prospective bidders.

The structural steel framing was to support either of two types of barrel surface. Both alternates had the same fabricated steel arch ribs, steel purlins and supporting frames. However, one was covered with a poured gypsum slab, while the other utilized a precast slab made with mineralized wood fiber and portland cement. Concrete supporting frames similar to those for the concrete barrel construction were specified for the steel alternate, but the steel ribs were spaced 38 ft on centers, rather than 28 ft 4 in. as were the reinforced concrete arches. The steel ribs and purlins were to be left exposed below the roof barrel.

Structural engineering for the two types was accomplished by two different and independent firms. As a result, the basic design assumptions were somewhat dissimilar and varied in a manner disadvantageous to the concrete type. For the designs to be comparable structurally, either the strength of the concrete framing could have been reduced, or the strength of the steel framing should have been increased. The latter would have required either an increase in web depth or the addition of cover plates, which would have raised material and fabricating costs.

The economy of thin-shelled construction is usually dependent on the number of re-uses of the relatively expensive falsework. In the Alabama coliseum, the falsework was used only 5 times, and because of the circular shape of the roof plan, the complete falsework was utilized only in one or two pours near the center of the building. Furthermore, since the springing line of the barrel is 50 ft above the ground, the falsework was unusually big, and large concrete frames for supporting the ribs at this great height were required.

In spite of these handicaps, the two lowest of the three bidders on the arch barrel, frames and footings were lower in price for concrete than for steel. In addition, the quoted time for construction by the low bidders was 30% longer for steel than for concrete.

• **Designers and contractor**—The coliseum was designed for the State of Alabama by Sherlock, Smith and Adams under the general direction of Howard H. Houk, director of the technical staff, State of Alabama Building Commission. Construction was supervised by the same state authority under the personal direction of Mr. Houk and by W. G. Stevenson, resident engineer. J. A. Jones Construction Co. was the contractor, with John L. Blythe as general superintendent. Ammann & Whitney were structural consultants to the architects on the design of the main arch roof.

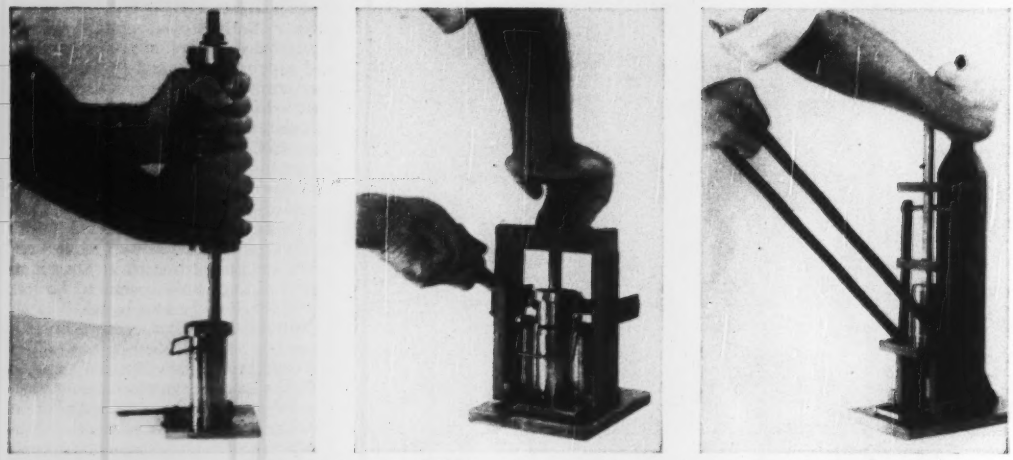


FIG. 1. THE HARVARD COMPACTION APPARATUS is small and simple to construct. Here shown are the three principal steps in its use, compacting the sample, removing the mold collar and removing the specimen from the mold.

Small soil compaction apparatus duplicates field results closely

Stanley D. Wilson

Assistant Professor of Soil Mechanics and Foundation Engineering, Harvard University, Cambridge, Mass.

THE TIME, effort and quantity of material required to obtain moisture-density curves are serious shortcomings of the presently accepted laboratory compaction procedures.

The compaction apparatus described in this article overcomes these objections to a large extent. For the past year it has been successfully used in a course in soil testing given at Harvard University, where it met with an enthusiastic reception by the students. It was easily possible for the inexperienced operators to obtain data for two complete moisture-density curves in one afternoon, and in one instance the writer obtained data for six complete sets of curves in four hours. This contrasts with the many hours of hard labor required to obtain one reliable curve using the Modified AASHO method of compaction.

The reduction in labor and quantity of material required alone makes such a test of considerable value to engineers and laboratories engaged in either research or earthwork compaction. In addition, however, the apparatus utilizes a novel method of compaction which more closely duplicates the kneading action of sheepsfoot rollers than do dynamic methods.

• **Description of apparatus**—The compaction equipment is illustrated in Fig. 1, and working drawings of the tamper and mold are shown in Fig. 2.

The compaction mold and extension are made from a bronze bearing. The mold is 1⅓ in. inside diameter and 2.816 in. long. Its volume is 1/454th of a cubic foot, which means that the net weight of a compacted specimen in grams is numerically equal to the unit weight in pounds per cubic foot. The extension collar, base and clamps hold the mold while the soil is being compacted.

The tamper consists of a one-half inch diameter brass rod, with a wooden handle on one end. This handle is grooved to fit the closed fingers of both hands, and inside the handle is a compressed spring. As the operator pushes down on the handle, the load is transferred through the spring to the tamper. As soon as the load equals the prestress, the spring starts to deform. Although this deformation is made visible by clearance between the brass cap and the adjusting nut, the operator quickly learns to recognize this condition by "feel," and to control the applied load within a few pounds. This tamping force can be changed within wide limits by using springs with varying degrees of stiffness.

The device shown in the center of Fig. 1 holds the soil in place while the extension collar is being removed. This avoids shearing off the specimen and gouging below the level of the top of the mold.

The lightweight sample ejector shown in the right of Fig. 1 removes the compacted specimen from the mold quickly and with little disturbance. Because the ratio of height to diameter is greater than 2:1, the compacted specimens are suitable for unconfined and triaxial compression tests without further trimming.

Working drawings of the collar remover and of the sample ejector are available upon request. These units are not vital components of the apparatus.

• **Preparation of material**—Preparation of soil for testing is essentially the same same as with any other laboratory compaction test, except that only 2 to 3 lb are required to obtain one moisture-density curve with 6 to 8 points.

For cohesive soils, the following procedure has been found most satisfactory:

First, mix the soil thoroughly to break up the lumps and ensure a homogeneous mixture. Then divide into 6 to 8 portions, such that each portion contains slightly more than

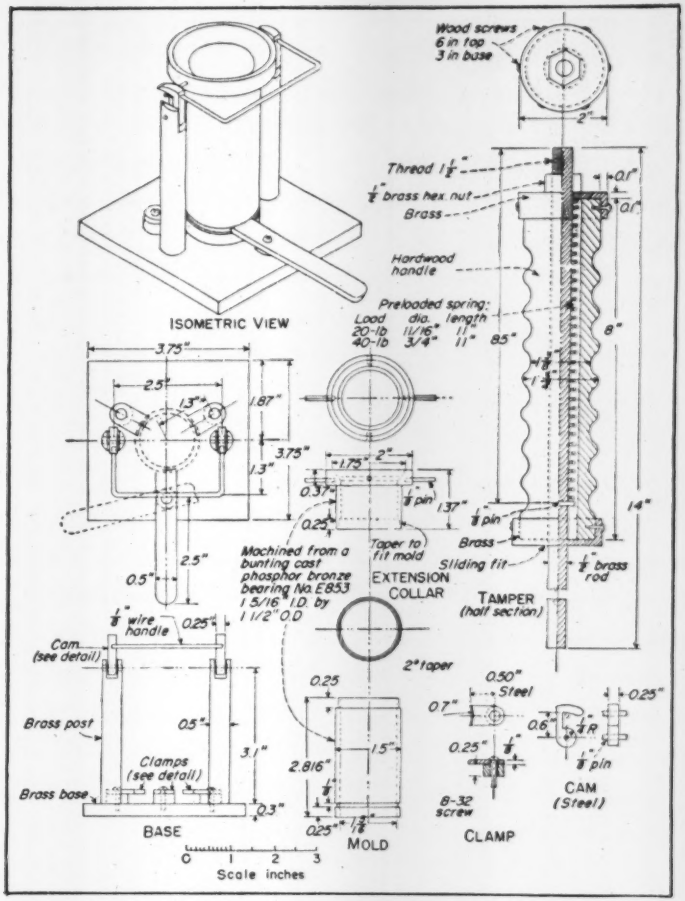


FIG. 2. ESSENTIAL PARTS of the soil compaction apparatus. The tamper is the major element in the novel method by which specimens are prepared with this equipment.

enough material for one test. To each portion add approximately the required amount of water to obtain the desired range of moisture contents. After thorough mixing, place each portion in a small glass jar with tight fitting cover and store overnight or until ready for testing.

For soils that mix readily with water and have low dry strengths, it is satisfactory to add water and mix the specimen immediately prior to testing.

As with any other laboratory compaction test, it is important that a compacted specimen not be remixed and used over again.

• **Test procedure**—1. With the mold and collar clamped to the base, place the desired amount of loose soil in the mold. For five layers, two slightly heaping teaspoonsful will be required for each layer. Level the surface by pressing lightly with a wood plunger.

2. Insert the tamper in the mold until it is in contact with the surface of the soil, and press down firmly until one feels that the spring is starting to compress (Fig. 1, left). Release the force and shift the tamper to a new position. Each of the first four tamps should be applied in separate quadrants and adjacent to the mold. The fifth tamp should be in the center, making one complete coverage. This cycle is then repeated until the desired number of tamps has been applied. The tamps should be applied at the approximate rate of 10 tamps per 15 seconds.

3. Add the next layer and repeat the procedure until the required number of compacted layers has been placed. The top layer should extend at least ¼ in. into the extension collar.

4. Transfer the mold assembly to the collar remover and release the clamps. Then press down firmly on the piston and at the same time pull up on the handle, prying the collar loose from the compacted soil (Fig. 1, center).

5. Remove the mold from the base and carefully trim away the excess soil from the top of the mold and from the bottom, if any.

6. Weigh the mold containing the compacted soil to the nearest 0.1 gram. It is convenient to use a tare weight equal to the weight of the empty mold, as then the resulting net weight is numerically equal to the wet unit weight of the compacted soil in pounds per cubic foot.

7. Remove the specimen from the mold with the sample ejector, (Fig. 1, right), and place in a suitable container

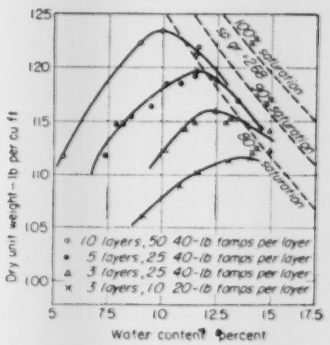


FIG. 3. TYPICAL MOISTURE-DENSITY CURVES for clayey sand. They can be duplicated easily and quickly by untrained personnel.

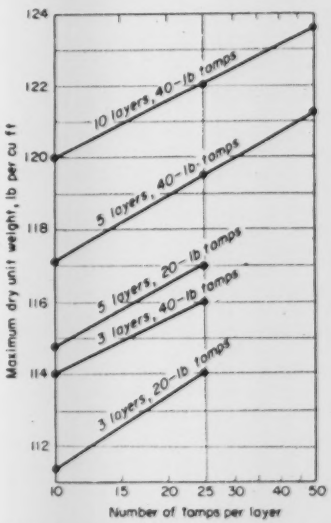


FIG. 4. RELATION of maximum dry unit weight to compactive effort for clayey sand measured in tamps per layer.

for drying and determination of water content. If the specimen is used for an unconfined compression test, it is dried after the test. If a triaxial compression test is made, the water content may be determined from the excess material removed from the collar.

8. Compact additional specimens until points have been established on both sides of optimum moisture content.

9. After all water contents have been obtained, compute the dry unit weights by means of the formula:

$$\text{Dry unit weight} = \frac{\text{Wet unit weight}}{(100 + \text{water content } (\%))} \times 100$$

• **Typical test results**—Four typical moisture-density curves of a clayey sand from Clinton, Miss., are shown in Fig. 3. These curves were obtained by varying the number of layers, the number of tamps per layer, and the tamping force. Tests on other soils verify that the curves are quite clearly defined, and that individual points can be duplicated by untrained personnel making no particular effort for precision.

The plot shown in Fig. 4 relates the variables of number of layers, number of tamps per layer, and tamping force to the maximum dry unit weight for this same clayey sand. The fact that there are practically no deviations from the average lines also indicates that the results are consistent.

• **Correlation with field compaction**—In January, 1950, the writer presented a paper before the Soil Mechanics and Foundation Division of the ASCE, describing a comparative investigation made on two soils whose field compaction characteristics had been extensively studied by the Waterways Experiment Station. Fig. 5 compares moisture-density curves for the Modified AASHO, Standard AASHO, and the 2,000-psi static method for each of these two soils with one typical field compaction curve and one Harvard compaction curve. Data for all curves except the latter have been taken from REPORTS No. 1 and No. 2, SOIL COMPACTION INVESTIGATION, Waterways Experiment Station, 1949.

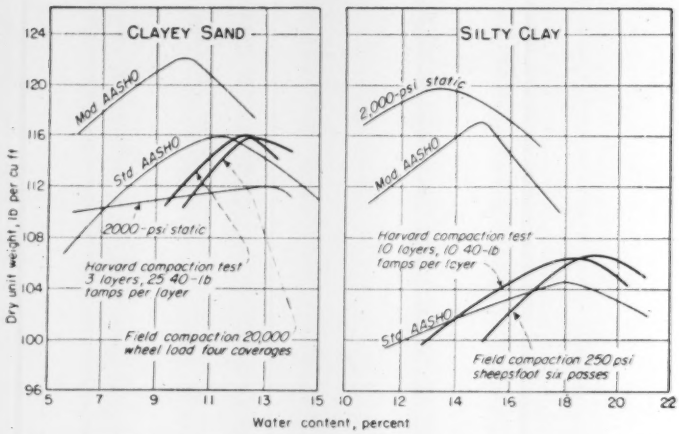


FIG. 5. FIELD AND LABORATORY RESULTS compared for various methods for obtaining moisture-density curves.

As can be seen from Fig. 5, it was possible by a suitable selection of spring, number of layers, and tamps per layer, to obtain moisture-density curves that more closely duplicate field compaction curves than do either the laboratory-dynamic or static methods of compaction. However, the tests indicate that no one standard procedure adequately duplicates field compaction for all types of soils.

The writer hopes that publication of this article will stimulate others to build the apparatus and to conduct similar investigations on other soils.

Professor A. Casagrande first suggested to the writer the use of a miniature compaction device and contributed valuable suggestions for its improvement. The necessary development work was made possible by a research grant from the Milton Fund of Harvard University.

Accounting device speeds road survey

New Jersey State Highway Department engineers—taking advantage of the versatility of conventional punch-card accounting machines—have developed a new means of determining traffic flow through heavily travelled intersections.

According to Commissioner R. J. Abbott, the new system has resulted in savings of 90% over older traffic check methods. Results have been so good, in fact, that the U. S. Bureau of Public Roads is now urging other states to adopt the idea for accuracy and efficiency, Mr. Abbott said.

• **Punch the card**—Punched cards—similar to those used in police identification systems and in accounting, are used as a basis for mechanical segregation of information gathered by the survey.

Here's how it works:

Motorists entering the traffic circle under study are handed a card, upon which has been pre-punched the hour of entrance, point of entrance and type of vehicle.

When they leave the intersection, they surrender the card to state highway employees stationed at each exit point.

From the cards, then, several classifications of information are available:

1. How many of each type of vehicle passed through the circle at any given hour;

2. Where the vehicles entered the circle, and where they left it.

By keeping the cards gathered at each exit point in separate hourly groupings, it requires only a single operation in the highway department's home office in Trenton to punch added information on 80,000 or more cards.

• **Now the savings**—And here, according to Abbott, is where the saving comes in.

Previously, it took a group of experts several weeks to analyze the information gathered from field surveys of this type. But, by combining the card punch system with the electrical accounting machine—which can separate out the desired cards by the punched holes at an enormous speed—only hours are needed.

The system was used most recently in a survey of the intersection of State Routes 42 and 45 in Camden County, preparatory to modernizing this important highway junction. This particular survey was done in two days.

Mr. Abbott pointed out that, normally, such a survey would result in long tally-sheets turned in by each man used for checking. These would have to be assembled on master sheets, and then evaluated by the experts, with allowances for errors both in obtaining the figures and in transcribing them.

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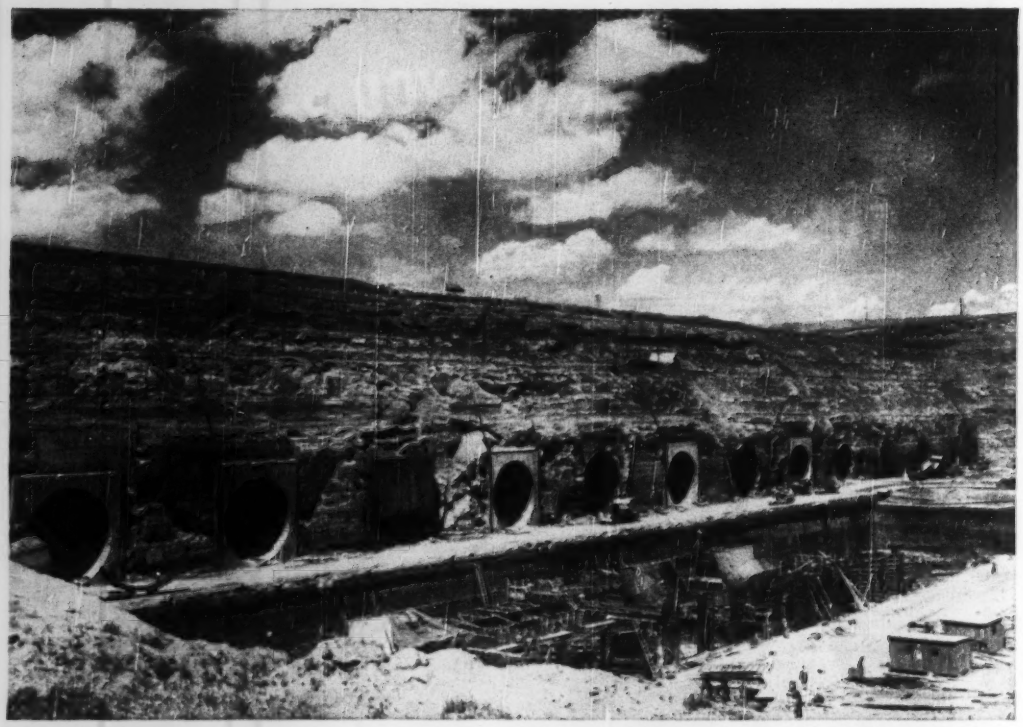


EIGHT OF THESE TUNNELS are for power; four, at extreme right, are for reservoir regulation and flood control in the completed structure. All 12 will be utilized for diversion of the river during closure and until the spillway is constructed.

Mining Fort Randall tunnels in chalk

INGENUITY, INVENTIVE ABILITY and construction know-how are paying multiple dividends in driving 12 big tunnels at Fort Randall Dam on the Missouri River in South Dakota.

Located just upstream from the Nebraska South Dakota border, Fort Randall dam and reservoir is one of the largest units in the Pick-Sloan plan for development of the Missouri River Basin. Pertinent data on the project are shown in an accompanying table.

The 12 tunnels have 22-ft and 28-ft finished inside diameters. Special jumbos mounting a conventional slabbing saw (coal saw) that cuts the periphery of each tunnel to a neat circle are saving money for both the contractor and the Corps of Engineers.

• **Here's how they save**—Tunnel driving is speeded since two men on the saw-jumbo can cut as much periphery of tunnel in 1¼ hr as could 16 men in 3 hr by line-drilling (as was done in the first two tunnels before the saw-jumbo was perfected.) There is little overbreak, since the saw cuts such a smooth and true circle.

The contractor gets paid for excavation and concrete lining clear to the maximum pay diameter (B-line). This line is 6 in. outside of the A-line or minimum concrete lining thickness: 2 ft in the 22-ft tunnels and 2 ft 3 in. in the 28-ft tunnels.

Actually, the diameters of the rough bores average about 3- to 4-in. less than the diameters of the B-lines. Consequently, by this precision boring the contractor gets paid for some material he doesn't remove and for some concrete he doesn't have to place.

The Corps of Engineers also saves money since it is furnishing the aggregate and paying separately for the cement; a saving in concrete means less aggregates and cement.

• **No "cut-shots" needed**—A third advantage of sawing the periphery of the tunnel prior to blasting is that no "cut-shots" are needed. All holes can be drilled straight in and fired as "lifters" in standard delays, starting at the top line of holes and ending at the bottom line. This makes for uniform breakage, easily handled by the mucking machine. There is no fly-rock, and the muck pile stands at a sharp angle of repose.

• **Eight power tunnels**—Eight tunnels are for hydroelectric power; four are for reservoir regulation and flood control. All 12 will be utilized for diversion when the river closure is made in July 1952, and until the spillway is completed.

All tunnels are 873 ft portal-to-portal. Three flood-control tunnels are 22-ft ID for their entire lengths, with a 2-ft minimum thickness of reinforced concrete lining. The 8 power tunnels and the other flood-control tunnel are 22-ft ID for 225 ft at the upstream end. The remaining 648 ft of tunnels are 28 ft ID, with a minimum of 2 ft 3 in. reinforced concrete lining.

A 22-ft dia steel penstock liner will

be placed in the downstream 648 ft of all power tunnels and one flood-control tunnel. These dimensions require two sizes of rough tunnel bore: 33-ft dia for 648 ft of each of 9 tunnels, and 28-ft for the remainder of these tunnels and for the full length of the other three flood-control tunnels. Tunnels are located 70 ft c-c.

• **Developing the saw-jumbo**—The saw-jumbo was conceived and developed on the job to speed the work by eliminating the costly line-drilling by electric coal augers.

The Niobrara Chalk through which the tunnels are being driven is fairly hard, but specifications required cutting or line-drilling around the periphery of the tunnel to a penetration of 8 ft before blasting an 8-ft round. This was to prevent damage to the chalk rock outside the bore of the tunnel.

Starting with an all-welded jumbo frame, the contractor made two heavy ring templates on which the slabbing saw operates. They were mounted at the front of the jumbo and the chain-driven cutterhead saw modified to operate around them in a circle. A 10-hp air-driven motor drives the saw around a ring-gear on the forward template. A 75-hp ac motor operates the saw itself.

As with most new inventions—incidentally, the contractor has applied for a patent on this rig—there were many bugs that had to be eliminated. One was the lubrication system.

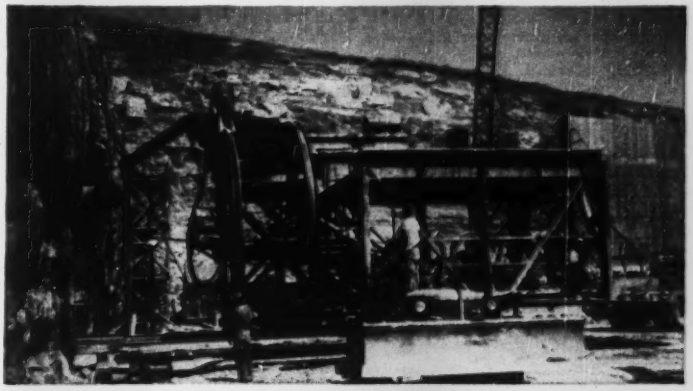
• **Bugs**—Ordinarily, a slabbing saw operates in only one position—but this one had to cut a full circle in the tunnels. Consequently the entire lubrication system was revised for force-feed lubrication in any position.

Another mechanical innovation is an extension head on the saw, actuated by a small air-driven motor. It has a 16-in. travel, radially. This mechanism permits the saw and its driving head to be moved out and set for cutting a circle of the required diameter, then pulled back clear of the face and retracted radially to clear the inside flanges of previously set tunnel ribs so the jumbo can be pulled back from the tunnel heading while blasting. The saw can also be tilted, as necessary, by manual control.

• **Tungsten-carbide teeth**—The cutting teeth of the saw have tungsten-carbide tips permitting six 8-ft deep cuts around a 33-ft dia. circle before sharpening. A set of teeth usually take 6 re-sharpenings before being discarded.

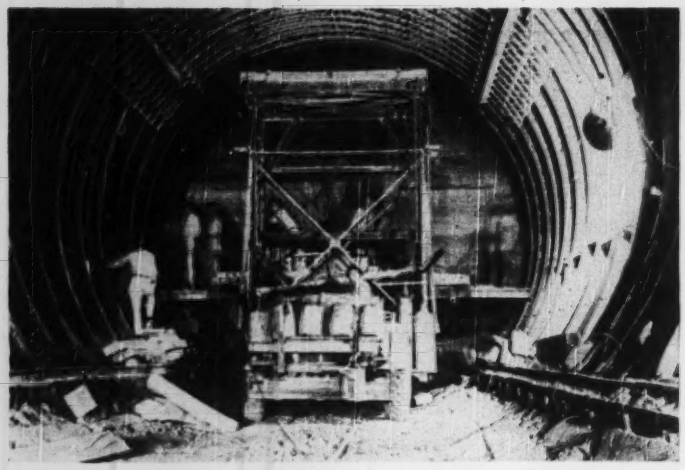
Two of these special saw-jumbos were built: One for the 33-ft bores and one for the 28-ft bores. In ad-

OPERATING MECHANISMS of the job-developed rig include a 9-ft conventional slabbing saw with chain-driven tungsten-carbide teeth powered by a 75-hp electric motor; a 10-hp air motor to drive the cutterhead around a geared circular template; and a small air motor to position the saw radially.



AFTER EACH SAWING CYCLE, the jumbo is pulled out of the tunnel, shifted sideways by tractor and rail-dolly, and moved into position for making a saw-cut in another tunnel being mined.

VERSATILE TRUCK-MOUNTED JUMBO cuts cost of setting rib-steel by 50%. Invert segment is set first; then 3-piece hinged rib is hoisted into correct position and bolted to complete the circle. Later, all four rib-joints are lap welded.



ELEVATING PLATFORM on rib-setting jumbo expedites loading of blasting holes. Overhead canopy of light gage curved trusses cantilevers out over the muck pile to protect workmen during mucking, drilling, loading and rib-setting.

MAJOR CONTRACTS

Construction Contracts

Contract	Contract Price	Contractor	Completion Date
Tunnels	$8,590,000	Silas Mason Co.	Feb. 1, 1951
Outlet works and powerhouse foundations	10,980,000	McCarthy Improvement Co.	July 1, 1951
Intake structure	11,840,000	Johnson-Winston Co.	Jan. 1, 1952
Excavation and Embankment:			
Stage I	4,415,000	Western Contracting Corp.	1948
Stage II	4,200,000	Western Contracting Corp.	1949
Stage III	7,200,000	Western Contracting Corp.	Mar. 1, 1953

Materials Contracts

Tunnel bracing	856,000	Commercial Shearing and Stamping Co.	Sept. 1, 1950
Intake bulkhead frames	137,000	Lakeside Bridge & Steel Co.	Oct. 15, 1950
Coarse aggregate	1,036,000	Tobin Quarries	May 1, 1951
Fine aggregate (sand)	423,000	Hallet Construction Co.	May 1, 1951
Intake gates	1,662,000	Northeastern Boiler & Welding, Ltd.	Oct. 5, 1951
Gantry crane (intake)	120,000	Whiting Corp.	Nov. 15, 1951
Hydraulic turbines	2,500,000	Allis-Chalmers Mfg. Co.	Sept. 27, 1952
Generators	4,304,000	Westinghouse Electric Co.	Mar. 21, 1954

MAJOR TUNNEL QUANTITIES

Item	Quantity	Unit price
Tunnel excavation	294,000 cu. yd.	$12.40
Concrete lining	92,500 cu. yd.	18.40
Cement	121,000 bbl	3.75
Setting 22-ft dia tunnel ribs	1,200 rings	285.00 each
Setting 28-ft dia tunnel ribs	1,560 rings	400.00 each
Reinforcement (lapped splices)	9,700,000 lb	0.11
Reinforcement (welded splices)	2,180,000 lb	0.156

* Concrete aggregates and tunnel ribs furnished by the government.

dition, the contractor is using a truck-mounted jumbo for setting the 10-in. H-beam tunnel ribs, or ring-steel, and five jumbos for handling 8-in. pipe for pumping the concrete lining. Form carriages are an integral part of the collapsible steel forms used for placing the concrete lining.

The saw jumbo operates on 16-ft ga. rails supported on brackets clamped to previously erected tunnel ribs, the form carriages operate on 10-ft ga. rails and the mucking machine on 36-in. ga. rails.

Tunnel mining began in May 1949 and should be done by next Jan. 1. Best week's work has been 311 ft of 33-ft tunnel; driving three tunnels simultaneously and working 24 hr per day, 6 days per week.

Such progress is a combination of equipment developed to fit the job, and coordinated split-timing of all operations. This is how they do it:

• **Mining an 8-ft round**—First the saw jumbo is moved into the tunnel and up to the heading by a crawler-type tractor, which also acts as an anchor while sawing.

Starting at the 4-o'clock (lower right) position, the saw is "sumped-in" to its full 8-ft depth and cuts clockwise around to the 7-o'clock position. It is retracted, moved a few inches around the circle, and sumped-in again, leaving a small plug. Sawing continues up to the springline (9-o'clock position).

At this point the sawing is stopped until all blast-hole drilling is completed. Then it is continued around to within a few inches of the 4-o'clock position, leaving a second plug to hold the huge core of chalk in position.

Miners drill from the saw jumbo, with hand-held jackhammers operating 1¼-in. twisted, solid diamond-steel drills. An 8-ft hole can be drilled in about 1½ min.

• **Heavy shooting not needed**—The chalk shoots easily. Average drill pattern is 41 holes for the 33-ft tunnels, loaded with 40% powder, using 0.6-lb per cu yd of rock (solid measure). The sawed periphery gives compression relief during blasting—done in 6 waves of delays from top to bottom. Actual sawing time for a 28-ft circle is 1 hr 10 min with about a 30-min wait to complete drilling.

After completing a circular cut, the saw jumbo is pulled back out of the tunnel, shifted sideways on a special rail-dolly and pushed into another tunnel being mined, to make a cut there.

Two sets of 10-in. H-beam steel ribs then are set on 4-ft centers, and the holes loaded for firing. Very little lagging is needed. Ribs are set up to

FORT RANDALL FACTS AND FIGURES

LOCATION: Missouri River, 6-mi south of Lake Andes, N. D.

PURPOSE: Flood-control, hydro-power, irrigation, and navigation aid.

COMPLETION DATE (est.): 1954

TOTAL COST (est.) $166,000,000

STREAM FLOW DATA:

Drainage area	*263,480 sq mi
Maximum stream discharge (at damsite)	324,000 cfs
Annual runoff at damsite (av.)	21,543,500 acre-ft

RESERVOIR:

Gross storage (pool El 1375 msl)	6,200,000 acre-ft
Flood-control storage	2,500,000 acre-ft
Area (max pool)	107,000 acres
Length	140 river-miles
Shoreline	1,500 miles

EMBANKMENT:

Rolled earth fill	28,000,000 cu yd
Crest length	10,000 ft
Height (above streambed)	160 ft
Base width	1,600 ft

SPILLWAY (gated chute type):

Capacity	633,000 cfs
Crest length	1,048 ft
Gates	Twenty-two 40x29-ft
Excavation	28,000,000 cu yd
Concrete	500,000 cu yd

OUTLET WORKS:

Excavation	22,000,000 cu yd
Concrete	550,000 cu yd
Power tunnels	8
Flood-control tunnels	4

POWER INSTALLATION:

Initial (Four 40,000-kw units)	160,000 kw
Ultimate (Eight 40,000-kw units)	320,000 kw

ANNUAL BENEFITS (est.):

Hydroelectric power	$8,400,000
Flood-control	$1,200,000
Conservation	$2,830,000

FEDERAL FUNDS:

Allotted to June 1, 1950	$53,800,000
In 1951 appropriation bill	$28,000,000

* Includes 243,490 sq mi tributary to Oahe Reservoir, located upstream.

within 6 ft of the heading, before blasting. This gives a 14-ft working space, after blasting and mucking, for the saw jumbo in making its next circular cut.

• **Cut rib-erection costs in two**—A job-developed jumbo is credited with cutting the cost of rib steel erection in half. It is an all-welded steel frame with an elevating platform, mounted on a truck. The platform is raised and lowered by a winch with power take-off from the truck engine. This rig also is used in loading the holes.

The circular tunnel ribs come in four sections. Two invert sections with spreader angles are slung beneath the jumbo platform, carried into the tunnel, and set to line and grade. The other three sections are connected by temporary hinges. This unwieldy assembly is loaded by crane onto the elevator platform, with the two side segments pulled in and bolted together to clear previously set ribs. A snatch line holds the ribs free of the platform.

The jumbo backs into the tunnel up to the heading, and the three segments are raised to correct position for bolting to the invert section. The completed rings are blocked against the chalk periphery on 4-ft spacing. Later, all four joints in each rib are welded with lap-splices on both flanges. It takes about 1 hr to set a pair of ribs.

After the ribs are set and holes are loaded, the round is fired and a mucking machine moves in and goes to work. The mucker loads into 10-cu yd diesel-operated dump trucks, equipped with "water scrubbers" in the exhaust lines to keep down exhaust fumes. Tunnels also are ventilated with two 15,000-cfm fans forcing air up to the headings, through 24-in. metal ducts. The air flow is reversible and is used to eliminate dynamite fumes immediately after blasting.

• **Trucks help mucker**—Mucking is expedited by one simple expedient—muck trucks hook onto a drawbar at the rear of the mucker and push it back into the spoil pile at each bite of the dipper. This enables the mucker to get a full load each time, and to handle about 80 cu yd (solid measurement) per hour.

It takes about 2 min to load a 10-cu yd truck and an average of 4 min to wheel the loaded truck out of the tunnel and spot the next one in position for loading.

Although there are very few "fall-outs" of chalk after blasting, workmen are protected by a 20-ft length of welded light-gage roof truss canopy at the top of the tunnel. This safety assembly is supported by two trolley beams hung from previously erected ribs and cantilevering 20 ft past the forward rib; out over the muck pile, to the heading.

This protective canopy is run forward immediately after each round of blasting and remains in position during mucking, drilling and loading. It is retracted only while setting the crown rib steel.

• **Pump concrete lining**—Tunnels are being lined with concrete, pumped into place from the batching and concrete plant near the downstream portals. Two booster pumps are used in the longest lines. Tunnel lining is placed in 24-ft monoliths, in two pours; first the invert section, then the remainder of the circle after the invert has cured 14 days.

Air entraining cement is used throughout and all concrete is vibrated. The concrete is placed behind steel forms, made collapsible for moving ahead through previous pours. There are three sets of forms for the larger tunnels and four for the smaller ones.

• **Men in charge**—Silas Mason Co., Shreveport, La., holds an $8,590,000 contract for mining and lining the twelve tunnels. The government furnishes all concrete aggregates and steel tunnel ribs under separate contracts. R. B. Jewel, project manager for Silas Mason Co., designed the special saw jumbo, and George Lyle, general superintendent, is credited with its development.

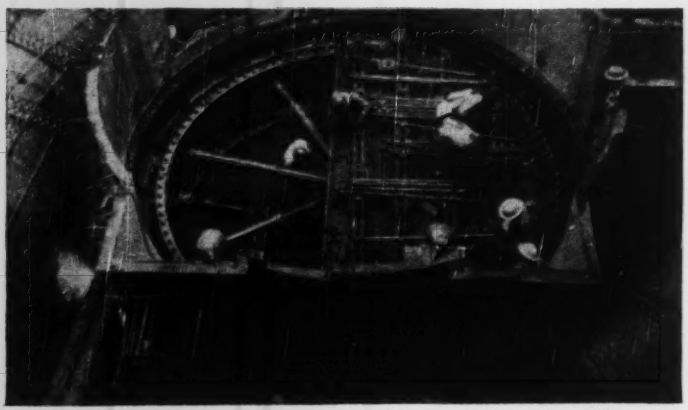
Fort Randall Dam is being built under the supervision of the Omaha District, Corps of Engineers. Col. H. J. Hoeffer is district engineer. George O. Evans is area engineer, assisted by C. B. Stokes. Charles R. Brown is chief of construction at the damsite and M. R. Howard is resident engineer for tunnels and outlet works.

Delaware Memorial Bridge to be opened July 1, 1951

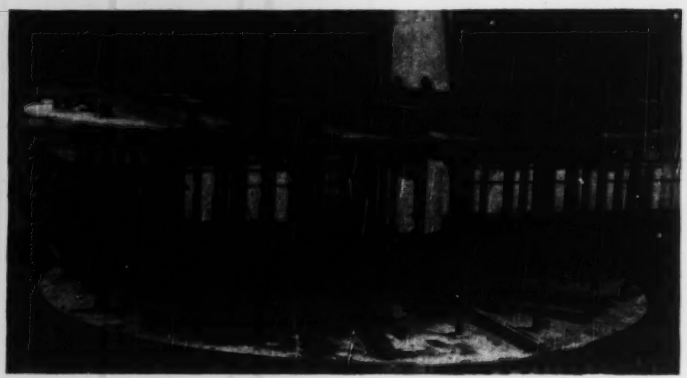
The $40,000,000 Delaware River Memorial Bridge near Wilmington, Del., is now scheduled to open by July 1 of next year, approximately 30 days later than originally planned, according to W. W. Mack, director of the River Crossing Division of the Delaware State Highway Department.

Construction still remaining on the project will be stepped up in order to achieve the goal, Mr. Mack said.

About $16,000,000 in bridge contracts has been completed, with the same amount under construction or nearing completion.



WITHIN THE SCROLL CASE where turbine will set, a bulkhead is installed. Bottom plate and radial positioning jacks are in place. Top plate installation is in progress.



BULKHEAD has as its chief components: top and bottom plates with channel stiffeners, vertical stay rods, radial positioners, and a vertical center pipe to pass centerline marker.

Bulkhead on scroll case allows one-pour encasement

CONCRETE ENCASEMENT of the steel scroll case on each of three hydroelectric units installed at Center Hill Dam on Caney Fork River, Tenn. was done in a single 24-ft lift. This departure from normal concreting procedure makes use of a specially devised bulkhead which permits scroll case and penstock to be filled with water before the concreting operation starts.

The procedure was used to expedite construction work—to meet the demand for more power in the area. The following advantages were realized:

1. Encasing the entire 150-ton scroll case in one high, 1,400-cu yd pour took one week (including time for bulkhead installation). The usual procedure of pouring about 10 shallow lifts—with three to four days between pours—would take five weeks.

2. Filling the penstock before concreting permits a check on its watertightness and a chance to do calking while the conduit is under pressure.

3. Full reservoir pressure in the system prestresses the scroll case; the cool water exerts actual operating temperature stresses. All elastic deformation is made before the scroll case is encased.

4. Weight of the water in the scroll case counteracts hydrostatic uplift of the deep concrete pour.

5. Water kept circulating through the penstock and scroll case serves to carry off heat of hydration—considerable for so large a concrete pour. Also, the cool water prevents distortion of the embedded steel by preventing any sudden temperature change.

• **Bulkhead design**—Key to this innovation in the concreting procedure is the means of sealing the scroll case so that it can be filled with water. A bulkhead was designed for the purpose of commercially available structural shapes needing little machine work.

This device is composed of two circular, 1¼-in. thick steel-plate bulkheads. One plate fits over the upper bolt circle of the speed ring; the other covers the lower bolt circle. Top and bottom plates are connected by 2¼-in. dia rods spaced on 30-in. centers.

These rods go through the plates and are threaded for nuts at each end. Between the plates the rods are contained in pipe sleeves.

Each plate is stiffened by pairs of 8-in., 11½ lb channels placed back to back on its outside. Plates are sealed against the bolt circles with ⅛-in. rubber strips; rubber seals stay-rod holes.

• **Bulkhead positioning**—Between top and bottom plates are means of centering the bulkhead at two levels. Just under the top plate and just above the bottom one, eight pipes radiate from the center with screw jacks set in their ends. These two systems of jacks permit precise positioning of the bulkhead. Vertically in the center of the bulkhead stands a 6-in. pipe through which a piano wire is stretched for centerline alignment checks.

Not only can the bulkhead be set on perfect alignment, but the piano wire remains as a check on scroll case position as concrete is poured.

Level checks on the scroll case are made directly on the upper bolt circle, through ten evenly spaced slots cut in the edge of the top bulkhead plate.

Water that is allowed to enter the bulkhead by opening the penstock gate moves out through a 6-in. valve on the lower plate into the draft tube. Design head was 165 ft.

Support of the 25-ton bulkhead—and the water inside it—comes from four bents underneath it made of 8-in. channels.

The weight of water and the scroll case is carried on 10 special concrete saddles, spaced between pipe-jack supports supplied by the manufacturer.

To ease transportation of the bulkhead, top and bottom plates were split in two, far enough off center to clear hubs of the centering devices. Plate sections have flanges that bolt together—against a gasket for water tightness.

H. B. Elder, resident engineer for the Corps of Engineers at Center Hill Dam, devised the bulkhead. Penstock extensions, scroll cases and turbines were fabricated and erected by Baldwin Locomotive Works. Massman-Metcalf and Hamilton Construction Companies are the powerhouse contractors. (Corps of Engineers photos)

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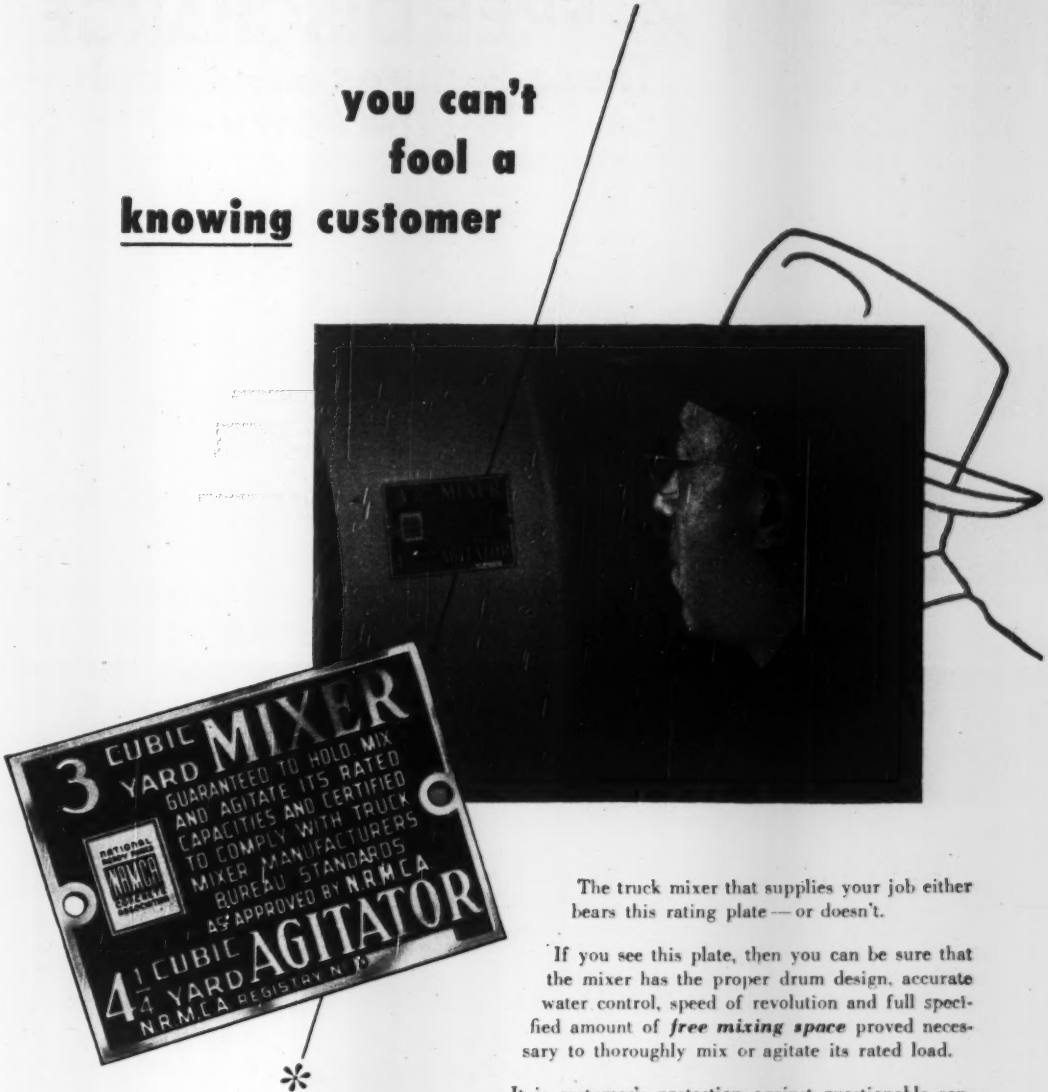
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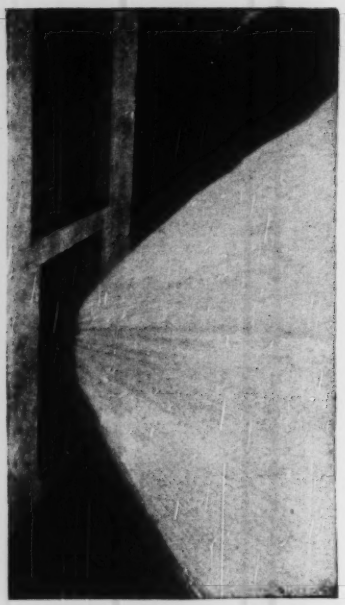

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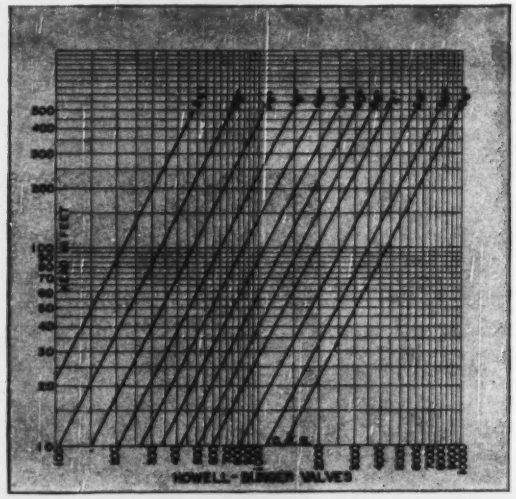

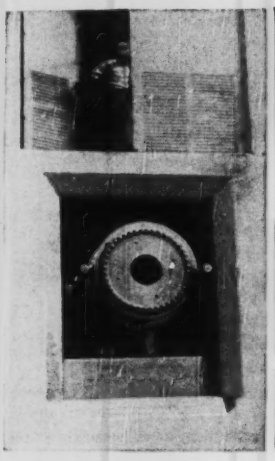

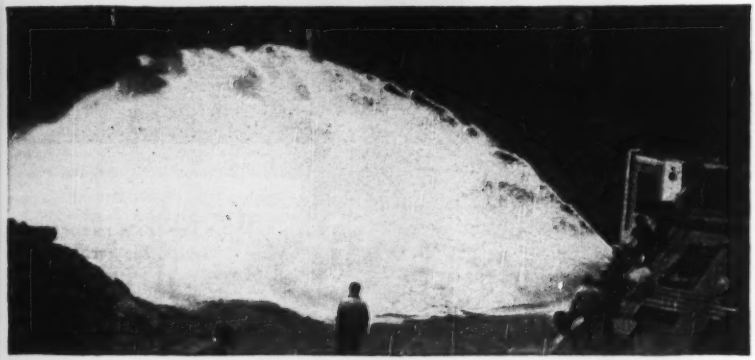

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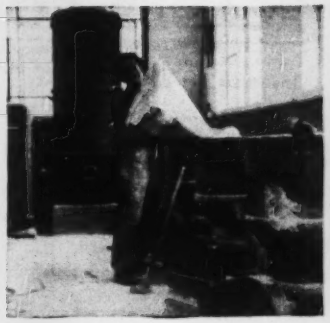
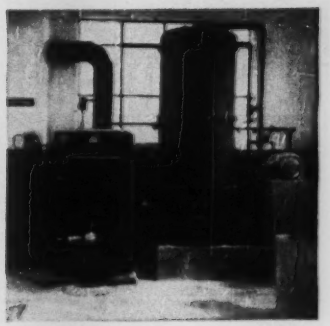
EXTREMELY HARD WATER from an irrigation project is softened in El Mante's new treatment plant. It's the first such plant to be built in Mexico.



SODA ASH, lime and alum—delivered to the plant in bags—are added to the raw water by chemical feed machines. Machines are charged manually.



CARBON DIOXIDE given off by the furnace (left) is cleaned by the scrubber (center) and blown through the water by the compressor (right).

Mexico's first water-softening plant

William E. Bell
Sanitary Engineer
Institute of Inter-American Affairs
Mexico City, D. F.

Softened and filtered water—a rarity in tropical countries—is now being turned out for domestic consumption and industrial use in El Mante, Mexico. This sanitation improvement has been made possible by completion of a 1.5 mgd lime-soda ash water softening and filtration plant. The plant—the first in Mexico—was put in operation last April.

• **Raw water**—Source of the water supply is the Rio Mante. This river emerges from the base of a range of solid limestone hills. The water, as a result, is extremely hard. Containing an average total hardness of 700 ppm, it is suitable for irrigation but is not acceptable for domestic or industrial purposes.

• **Process**—Raw water from a nearby irrigation canal is pumped to the treatment plant. Treatment consists of: chemical mixing; flocculation; settling; recarbonation, and filtration. Filtered water after chlorination is stored in a 94,000-gal clear-water tank.

Chemicals added to the raw water are lime, soda ash and alum. Floc formation is aided by two mechanically operated paddle wheels. Calcium carbonate formed by addition of lime and soda ash is deposited in the settling basins.

Recarbonation is by bubbling carbon dioxide through the settled water. This insures a stable water—one that will neither corrode pipes nor precipitate an excessive amount of calcium carbonate in them.

Rapid sand filters—three units each rated at 0.5-mgd—provide the final clarification.

• **Performance**—During the short time the plant has been in operation, maximum reduction in total hardness has been 360 ppm (840 to 280). The average reduction ranges from 300 to 350 ppm.

Cost of treatment, including recarbonation averaged about $0.14 per day per ppm hardness removed. During the entire test period, the cost varied from $0.12 to 0.17.

One difficulty in operation is the daily variation in the water's total hardness. This has ranged from 450 to 840 ppm in a two-week period. Chemical-feed units are capable of treating a water with a total lime and soda ash requirements of 406 and 445 ppm, respectively.

The lime requirement has varied from day to day between 385 to 474 ppm; the soda ash from 452 to 650. Thus hardness of softened water—when chemical dosage is kept at a maximum—will vary directly as the total hardness of untreated water. Long periods with total hardness between normal limits of 450 and 600 ppm, however, are anticipated. During these periods water of fairly constant hardness will be delivered to the distribution system.

• **Lab control**—Rigid control is maintained over the softening process through a well-equipped laboratory at the plant. The lab is managed by a graduate chemist. Records are kept throughout the day of chemical tests made, amounts of chemicals used, recarbonation control and characteristics of water delivered to the distribution system.

This pioneering water treatment plant was built by the Department of Inter-American Cooperation in Public Health. This is a cooperative public health program of the Mexican and U. S. Governments. The United States is represented by the Institute of Inter-American Affairs, of which W. R. Stone is director of the Division and Health and Sanitation and Millard E. Smith, chief engineer.

Santa Barbara County fears suits from man-made rain

The threat of liability for damages caused by cloud-seeding has caused Santa Barbara, Calif., County board of supervisors to decline participation in a cloud-seeding pact.

Santa Barbara County, along with its various water districts, had contributed money for a county-wide seeding survey which showed rainfall could be doubled.

But the fear of damages has kept the county out of the cloud-seeding agreement—at least temporarily.

Said the supervisors in bowing out of the seeding operation: "If any individual or any political body contracts for increasing the natural rainfall by cloud-seeding operations, ... in all probability a legal liability would result for any resulting damage, regardless of the benefits."

The supervisors announced that they had been assured of obtaining an insurance policy of only $50,000—which, they say, is "totally inadequate."

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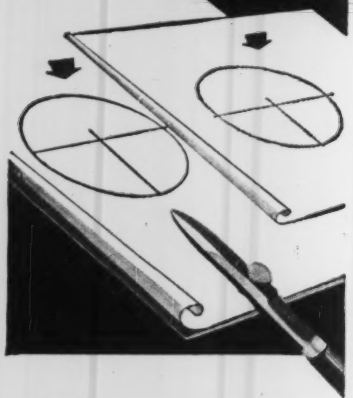

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READER COMMENT

Research for coal pollution

Sir: Your summary of K. S. Watson's paper on "Coal Mining: Stream Pollution Culprit", in the issue of Sept. 21, p. 41, deserves comment.

He limits his appeal for a research program on acid mine-water pollution to coal-mining companies and their enginering employees. Whatever they may decide on as a solution of the problem will be increased in value if it has the support of sanitary and chemical engineers in the employ of municipalities, water companies, railroads, and industries.

The economic welfare of many states is involved in addition to those in the Ohio River Valley Water Sanitation Commission. The increasing sale of gas and oil for fuel is seriously hurting the welfare of such coal-mining states as Pennsylvania and West Virginia as well as the municipalities and railroads in them. A compromise solution to coal pollution is required that will give reasonably good water to municipalities, water companies, railroads, and industries—but still permit coal mining.

Your summary mentions the paper I wrote for Mining Engineering of May 1949. It discussed the technical aspects of the pollution of the McDonald water supply. I was employed by a coal company but compromising of the suit prevented my appearance as a witness.

I was impressed by the insistence of witnesses for the water company upon the necessity for a well-nigh perfect water supply and by the difficulty in getting railroad and government water-supply engineers to appear for the coal company. They all seemed to have the idea that the coal company had no right on the water shed if any contamination of the McDonald water supply was involved. Wherein has pure water a greater claim on the opinion of engineers than coal mining as a means to buying food? Obviously there is no solution to the coal-contamination problem in such a narrow viewpoint.

Scientific data on methods for measuring and controlling coal pollution are badly needed. A research program should be started in which other interests than the mining industry have joined. Then real progress will be made.

Much is heard about the obligation of professional and business men to serve society unselfishly. Appeal on that basis could be made to much more than a dozen professional and business associations with interests in the Ohio River Valley to cooperate with modest money contributions and with the mining industry in a research program on coal pollution.

GREGORY M. DEXTER
Consulting Engineer
Scarsdale, N. Y.

Specs discourage bidders

Sir: If the State of New York is disappointed over the number of contractors bidding on its building projects, the reason is not hard to find. The plans generally are excellently prepared; payments and supervision are considerably better than on federal projects. But the specifications are a confusing collection of data and changes sufficient to stop the proverbial Philadelphia lawyer.

Specifications covering the general construction of a New York State project are usually composed of 37 or more printed sections, totaling 300 or 400 pages. In addition, there is a large number of subsections. These sections and subsections cover, in detail, not only the work for the project being estimated, but also all the work that may be required on projects of the present and future.

Under these conditions, to make things clear (?), there are four or five typewritten pages, called "Amendments," before each of the 37 sections. For example, in a recent project, Section IV, entitled "Concrete Work," contained 23 closely printed pages. There were 35 articles, numbered 401 to 435, and 173 paragraphs, which described all the possible ways of doing concrete work. Evidently, this was not enough. Just ahead of Section IV, there were inserted five typewritten pages of amendments, which limit, contradict, change and omit part of the printed specifications.

As a direct result of this type of specification, general contractors often experience great difficulty in securing estimates from subcontractors. In fact, many subcontractors of fine repute and responsibility definitely refuse to have anything to do with state work.

How much simpler it would be for the state's Architect's Office to write individually the specifications for each job, including only the work required for the one project!

It goes without saying that in these individual specifications, reference could be made to the standard specifications, which could be made available to any contractor interested in them.

A. D. VINCI
Cost Estimator
Yonkers, N. Y.

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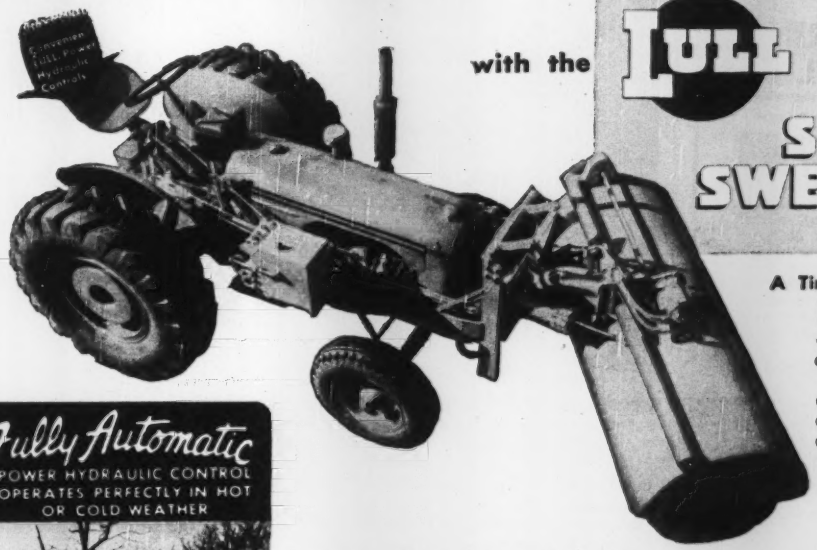

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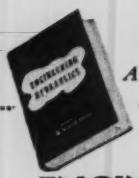

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FIELD AND OFFICE

BRIDGES FORM TOWER—This assembly of U. S. Army bridge section acts as a suspension bridge tower at Detroit Dam in Oregon. Two 1⅞-in. dia cables supported by this tower in turn support a 36-in.-wide conveyor belt bringing crushed aggregate across a 475-ft-wide canyon. Four standard bridge sections were laced together with light bracing and up-ended to form the tower. Conveyor coming in from the right is from a secondary crusher used to process surpluses of certain size materials. Contractor on the $28,000,000 Corps of Engineers job is Consolidated Builders, Inc., with Russ Hoffman as general superintendent.

Idle-spell storage of powered equipment

Contractors, municipalities, and highway departments can put their power-equipment engines "in mothballs" during idle spells by methods developed for protection of military vehicles in storage. Gasoline or diesel vehicles in intermittent use will benefit from proved lay-up procedures in lengthened life, improved operation, and cleanliness of internal parts, according to N. T. Brenner, chief fuels and lubricants engineer, tractor section, Gulf Oil Corp. Here are his suggestions for proper procedures:

• **Gasoline engines:** Drain crankcase when warm, fill to normal operating level with protective oil (no-rust type). Run engine 20 to 30 min at ¼ to ½ normal operating speed. To protect cylinder wall, piston rings, and valves, shut off the ignition, spray two oz of oil into each cylinder through the spark plug hole while rotating engine by hand or by the starter (at least five complete revolutions of the crankshaft). Apply oil to metal parts of spark plugs.

• **Diesel engines:** Follow same procedure for crankcase as with gasoline engines. Remove fuel injectors where possible, and spray at least two oz of no-rust oil into each cylinder to protect piston heads and valves. Rotate engine as recommended for gasoline engine. Apply oil to threads and bodies of injectors.

• **Fuel system of all engines:** Remove as much fuel as possible from the tank and run the engine without load until it stops for lack of fuel. No fuel should be left in the fuel system.

• **Miscellaneous:** Spray inside of tank and filler-cap threads with protective oil. Thoroughly lubricate engine accessories. Completely drain cooling system. Apply protective oils to exposed metal.

Since no-rust oils are formulated to serve for a considerable time in place of regular lubricants, the engine may be run on the no-rust oil without drainage when it is taken out of storage, until convenient to change.

ANY SUGGESTIONS?

We would like to hear of interesting new devices and methods devised by our readers to speed up and simplify field work; or of new techniques intended to simplify design computations. We will pay for published items, so send them to ENR's Field and Office Editor at 330 W. 42nd St., New York 18, N. Y.

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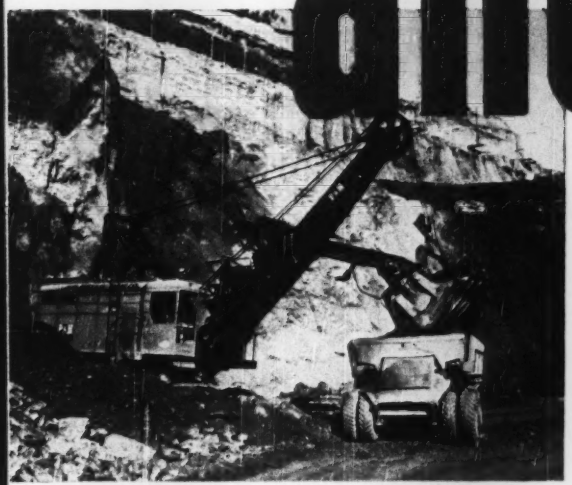

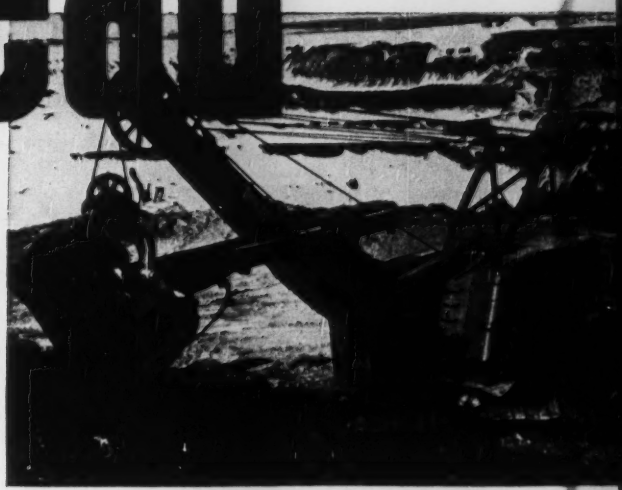

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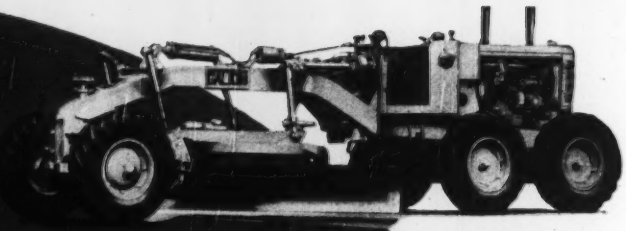

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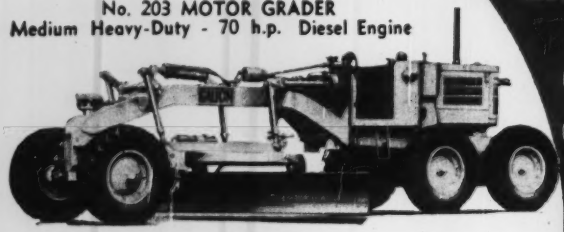

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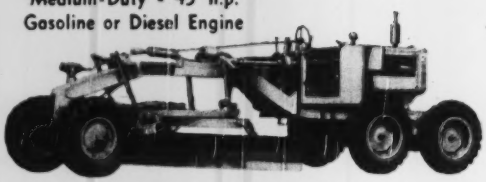

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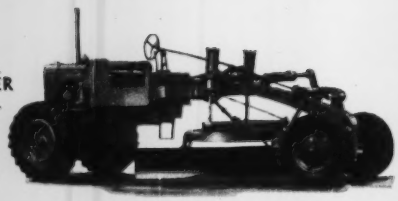

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DEVELOPMENTS ABROAD

European superhighway network is being considered for future

Britain, France and Luxembourg have agreed to work for the carrying out of a $5,000,000,000 plan to build 30,000 miles of new highways throughout western Europe

Britain, France and Luxembourg are backing plans to create a European road network of nearly 30,000 miles. Several other countries, including Holland and Belgium, are expected to join the movement and sign the declaration of principles.

If carried out, the plan would enable cars to be driven on roads with uniform safety standards from Narvik to Athens, from Glasgow to Warsaw, from Helsinki to Rome, or from Lisbon to the Russian frontiers.

Signatories to the declaration, which remains open for accession until June, 1951, do not bind themselves to start work on their roads at once. They will do what they can "within the framework of their national programs for public works or within the possibilities of international financing."

The main European arteries planned would be known as "E" roads and marked with a white letter and number on a green ground. For instance, road E1 would run under standard conditions from London to Palermo, linked by ferries over the English Channel and the Strait of Messina, and passing through Paris, Nice and Rome. Road E2 would link London-Lausanne-Milan-Brindisi, Road E3 Lisbon-Paris-Stockholm, and road E6 Rome-Berlin-Oslo-Skibotten.

Annexes to the declaration lay down standard road dimensions, surfaces and safety regulations. Two projected measures are the suppression of all level-crossings and roadside billboards. No "E" signs would be put up until a road conforms to general requirements.

It is hoped that governments signing the declaration will try to make their road projects and repair work conform wherever possible to the principles set out. But in Britain, for example, it is estimated that complete fulfillment of the plan would cost the equivalent of about $417,000,000, largely on Watling Street and the Great North Road.

Many of the countries do not have the material or financial resources to carry out the project. The proposed road arteries also have many gaps at present. Such as in Spain and in the Russian zone of Germany. The attitude of some governments, including the Italian, is uncertain.

The Sept. 19 meeting at which the declaration won its first three signatures was held at Geneva under the auspices of the United Nations Economic Commission for Europe. Countries attending included Britain, France, Luxembourg, Austria, Belgium, Finland, Denmark, Holland, Norway, Sweden, Switzerland, Turkey, Yugoslavia and the United States. Czechoslovakia was the only Cominform nation represented.

World Power Conference, New Delhi, Jan. 10-15, '51

The second postwar sectional meeting of the World Power Conference is to be held at New Delhi, India, Jan. 10-15, 1951. At the same time and place the International Commission on Large Dams of the World Power Conference will hold its fourth congress.

In view of the large-scale power development schemes under way in India and other countries, the Indian National Committee has selected for the theme of the sectional meeting "Utilization of Power in Its Various Aspects."

Also being held in New Delhi during the same period is the first plenary session of the International Commission on Irrigation and Canals, and just preceding these meetings is one of the International Association for Hydraulic Research, in Bombay, from Jan. 2 to 5.

An extensive program of study-tours to various projects in India is being arranged for attending scientists.

An Indian international engineering exhibition will be held at New Delhi in association with the conference and congress, during January and February. United Kingdom exhibitors include the British Electricity Authority, the North of Scotland Hydro-Electric Board, and a number of manufacturers of electrical plant and equipment.

European prefabs for export

The Caribbean Commission reports that prefabricated houses are to be sold at Martinique in the West Indies

(Continued on page 52)

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See our catalog in Sweet's

MORE POWER FOR LONDON—Construction is under way on the circulating water inlet chamber of the new Bankside power station, south of the Thames. Costing some $40,000,000, the station will develop 240,000 kw which will do much to ease London's power shortage. Many people opposed the project on the ground that it would spoil the view of St. Paul's Cathedral (seen in the background). Part of the generating plant is expected to be finished in 1951.—(Acme photo.)

according to a plan of the French Company of Paris, to relieve the housing shortage.

The Housing Commission of Victoria, Australia, has signed a $9,000,000 contract for 2,000 prefabricated dwellings made in Germany, all to be delivered next year. A prefab house built according to Australian specifications has been erected in Holland by a combine of Dutch industrialists as a sample of 1,000 to be exported to Australia if current negotiations are successful.

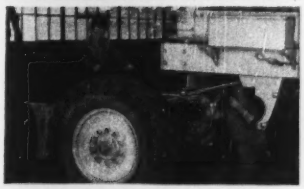
Australia has also ordered prefabricated dwellings in Great Britain, France and Austria.

JAPANESE BRIDGE—Japan has launched an extensive road building program to improve a highway system which has less than three percent of its roads paved. The plan calls for 142 new steel or concrete bridges, 780 new semi-permanent bridges and the rehabilitation and improvement of thousands of existing smaller bridges. Here and there in Japan are to be found some through-steel truss bridges like the one here pictured.

Adams Motor Graders

REAR AXLE REPLACED BY 1 MAN IN FROM 2 TO 4 HOURS

CLUTCH OVERHAUL REQUIRES 1 MAN 4 HOURS OR LESS



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DESIGNED BETTER FOR FAST SERVICING

Fewer hours in the shop—more hours on the job . . . that's what the fast, easy-servicing features of Adams Motor Graders mean to owners. Note in the accompanying photographs how usually difficult major repairs are accomplished in minimum time, with minimum effort.

BUILT STRONGER FOR TOUGH WORK

On the job, owners quickly discover that Adams Motor Graders have abundant power, strength and stamina—plenty of everything it takes for handling roughest, toughest work . . . for punching shale out of hillsides—making heavy ditch and bank cuts—scarifying hard surface material—bucking through deep snow drifts, etc.

Let your near-by dealer show you how Adams Motor Graders save you time and money—*on the job and in the shop.*

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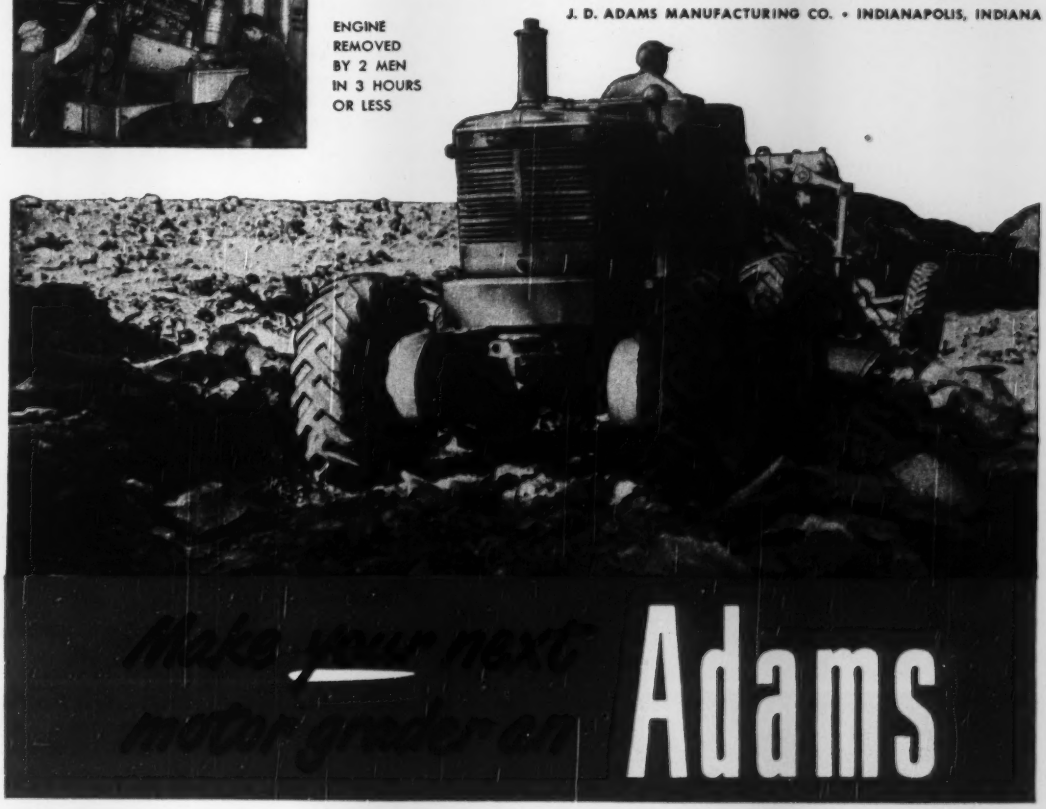
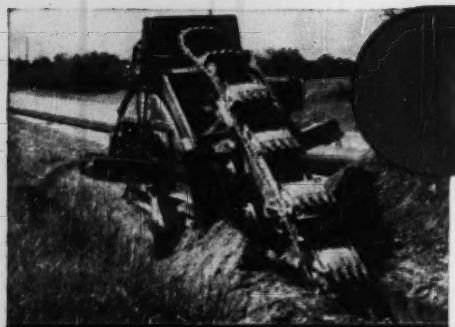


PARSONS



HEAVY-DUTY 250 Trenchliner is a 15-ton excavator that digs up to 12½' deep, 16 to 42" wide . . . excavates 1⅛ to 3⅛ cu. yds. per minute, depending on depth, width and materials. Leaves trench clean, ready for pipe.

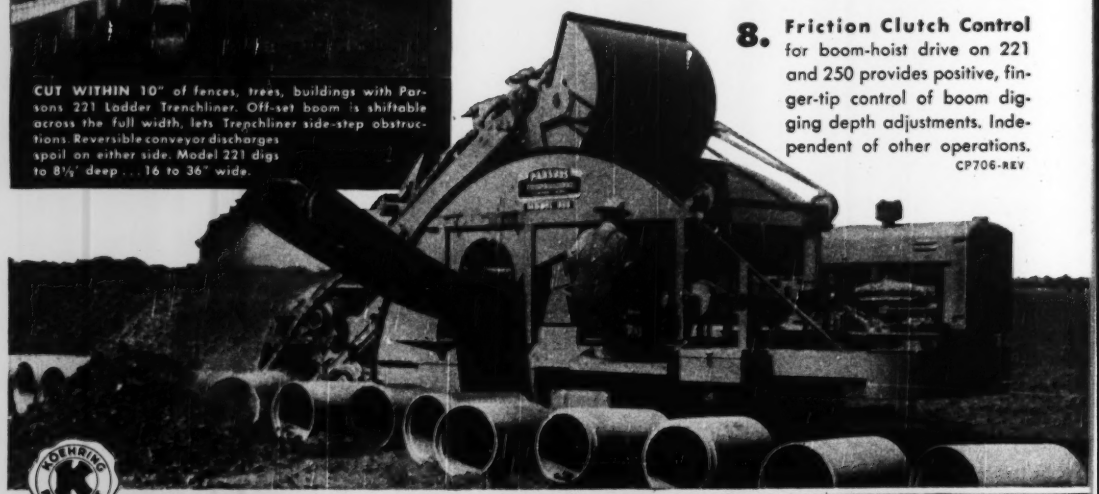
POWER TO DIG DOUBLE TRENCHES is built into the 310 Trenchliner. It will handle two bucket lines, dig a 6' wide box sewer at one pass. With short and long boom, it can dig step trench in single operation.

CUT WITHIN 10" of fences, trees, buildings with Parsons 221 Ladder Trenchliner. Off-set boom is shiftable across the full width, lets Trenchliner side-step obstructions. Reversible conveyor discharges spoil on either side. Model 221 digs to 8½' deep . . . 16 to 36" wide.

8 REASONS WHY YOU GET MORE FEET OF TRENCH PER HOUR . . . AT LOWER COST PER FOOT:

1. **Off-Set Boom Shifts from Side to Side** . . . digs as efficiently behind either crawler as it does in center position. Shifts easily, smoothly, because boom rides on rollers.
2. **Ladder Boom Telescopes** . . . quickly changed for depth variations. Locks securely at any point of adjustment.
3. **Conveyor Deposits on Either Side** . . . shifts by power in less than a minute. Arc makes it easy to reach up into trucks. Center-guided conveyor belt (standard on Models 221 and 250) prevents end wear on belt, assures proper alignment.
4. **Power Flow Simple, Direct** . . . gets maximum power to the digging end. Easy to control, simple to maintain.
5. **All Gears Completely Enclosed** . . . machine-cut gears, sturdy shafts, in one closed case, in continuous oil bath.
6. **Tractor-Type Crawler** . . . high rail-type crawler pad, keeps drive sprockets, chains, and lower rollers out of mud. Easily, simply adjusted. Low ground pressure. Less than 7 lbs. per sq. in. on 221 and 250, approx. 9 lbs. on Model 310.
7. **Arched Frame** . . . improves digging, travel balance, distributes weight on solid ground, well ahead of buckets.
8. **Friction Clutch Control** for boom-hoist drive on 221 and 250 provides positive, finger-tip control of boom digging depth adjustments. Independent of other operations.

CP706-REV



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PARSONS COMPANY

TRENCHLINERS*

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FOR YOUR HEAVIEST TRENCH EXCAVATION on sewer, gas and water main projects, you can keep profits up and costs down with this big Parsons 310 Trenchliner. It's built heavy-duty in every detail . . . digs up to 15' deep, 54" wide, has 45 digging speeds from 8" to186" per minute. With special dual boom, Model 310 can dig up to 6' wide.

KWIK-MIX
Bituminous MIXERS

More Batches Per Hour, Even Quality Mix

Kwik-Mix bituminous mixers are easily adaptable from portable, rubber-tired machines to stationary plant operation. One man handles complete operation of either 10 or 14 cu ft. models. Other advantages include easy loading, non-tilting drum, fast and thorough mix, accurate control. Tower Loader is optional equipment.

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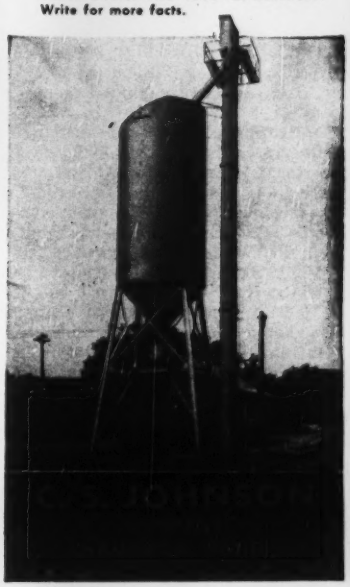
All-Welded, Portable Cement Handling Plant

Provides capacity for 254, 373 or 492 bbls. Screw conveyor and bucket elevator, box car or truck receiving hoppers, electric bin signals, aeration diffusers. Takes one or two 1000 lb. batchers. Write for more facts.



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SHOCK PROOF!
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FOR LONG LASTING, HEAVY DUTY
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MUNICIPAL AFFAIRS

THE WILLAMETTE RIVER, tributary of the Columbia, runs through the heart of Portland. It provides a 30-ft channel for ocean-going ships and its 13 miles of waterfront within the city holds many of the city's industries, as well as shipping terminals. The main business district (left) is west of the river, while two-thirds of the population resides on the east side. Seven bridges (two not shown in picture) connect the two areas of Portland's 70 square miles of territory.

Portland, Ore., pushes solution of many municipal problems

Two world wars, in which Portland was a center of shipbuilding activity, and production of low cost hydroelectric power by the government and private utilities were chief factors in increasing the city's population to around 400,000. With this growth have come municipal problems—housing, traffic and sewage disposal among them.

Apartment house construction, started in 1947 and still in progress, has gone a long way toward relieving the housing shortage. In three years, not including 1950, 260 apartment buildings, containing 2,911 units, were built. Permits for 18 more, valued at $10,000,000, have been issued this year. In three years FHA approved $24,000,000 in loans for Portland apartment house construction.

In line with the state of Oregon's campaign against stream pollution, Portland is spending $17,500,000 on a new sewage disposal system, which will be completed in 1953. At present the city has 61 sewers, 50 of which discharge directly into the Willamette River. The new system will carry sewage to a treatment plant near the Columbia River, ending pollution of the Willamette.

To relieve traffic congestion in the city's business district a system of one-way traffic was established this year. All streets in the west side retail area are included in the grid, with traffic flowing in opposite directions on alternate streets. Traffic officers report that the streets now carry from 5 to 100 percent more traffic than before the system was inaugurated, and that traffic speed has increased on an average of 5½ mph.

Congestion on bridges over the Willamette River, which runs through the heart of the city, is a problem yet to be solved, but the state highway department is doing something to relieve this situation by building ramps and new approaches to two of the spans.

Construction will be started next year on a throughway project which will connect downtown Portland with the Columbia River highway leading to eastern Oregon.

Civic improvements "sight unseen"

An unusual method of financing civic capital improvement projects will be submitted to Ann Arbor, Mich., voters at the November election. Proposed by Mayor William E. Brown,

Jr., the plan would permit the city to issue up to $100,000 worth of bonds annually—with an over-all limit of $500,000 outstanding at any one time—to be used for whatever project the city council might later decide upon.

Regarding this plan Mayor Brown says, "I originated this idea with the thought that needed small improvements could be made without incurring large expense and delay. My plan would place all of this power in the hands of the council rather than having to go back for the approval of every little issue—such as voting booths, park shelters, additions to public buildings. There would be no limit on this plan, but more than $500,000 bonds could never be outstanding."

Philadelphia picks sites for 3,166 housing units

The Philadelphia, Pa., Housing Authority has selected the eight sites in the city where it will build 3,166 low-rent housing units at a cost of $31,460,000.

The question of where the housing developments would be placed has been a source of some differences of opinion among various officials, civic groups and individuals. The sites are: Norris, Harrison, North Allen, Mill Creek, Diamond, Rittenhouse, Wilson Park and Abbot.

Dover, N. H., organizes public works department

Seven municipal divisions have been combined in an enlarged public works department at Dover, N. H. Philip W. Pease, city engineer since 1949, has been named public works superintendent. Edward Smith, who has been public works head since the resignation of Frank J. Grimes, will continue to serve as highway superintendent.

Dallas road projects—Discontinuance of a taxpayer's suit to restrain Dallas County, Tex., from carrying out a $22,500,000 road improvement program has enabled the county to sell the first $6,000,000 worth of its bonds to Drexel & Co. of Philadelphia. This provides funds to construct the first two road projects. A $1,722,000 bridge over the Trinity River on Forest Avenue in Dallas and linking this to Bonnie View Road; and the construction of a $4,750,000 speedway linking Hampton and Inwood roads by a highway from the southwestern part to the northern part of the county through the residential sections of Oak Cliff and North Dallas within the city limits. Engineers Koch and Fowler are planning the projects.

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(Patents Pending)

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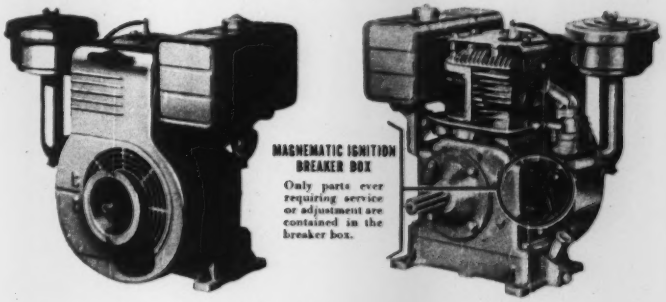

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LONG SPARK PLUG LIFE — magneto output tailored to engine requirements — sparks only on firing stroke — voltage decreases as speed increases, substantially lengthening spark plug life.

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QUICK, EASY STARTING — pull-up cranking with no danger of a "kick" during rope or hand cranking.

SEALED, WATERPROOF COIL — one piece, plastic insulated coil, fully sealed and waterproofed with molded-in high tension lead.

SIMPLE AND DEPENDABLE — no extra gears, bearings or lubrication system.

EASY TO SERVICE — only parts ever requiring service or adjustment accessible by removing breaker-box cover conveniently mounted outside crankcase.

Magnematic Ignition is another exclusive Briggs & Stratton development which is setting new standards of performance for single-cylinder, air-cooled engines.

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World Wide FACTORY SUPERVISED SERVICE

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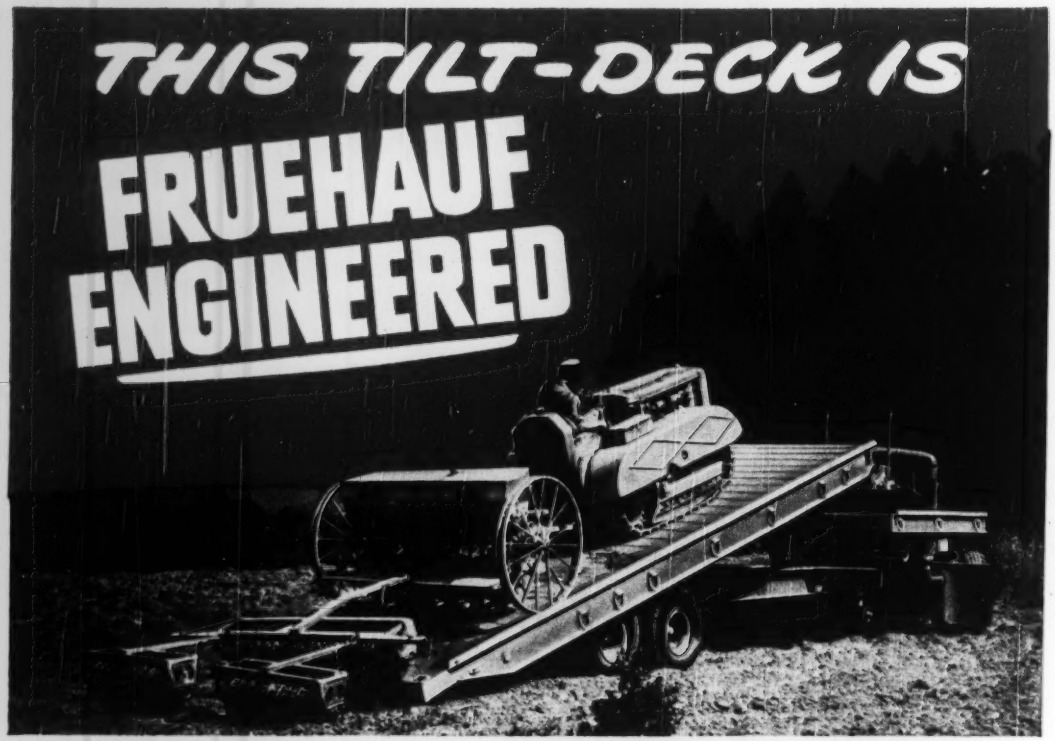
THIS TILT-DECK IS FRUEHAUF ENGINEERED



..FOR STRENGTH, SAFETY and ECONOMY!

EXTRA strength has been built in at all vital points. A specially designed positive locking device and locking pin at the side of the frame prevent tilting while under way . . . and an optional hydraulic lowering device lowers bed slowly and safely with loads from 5 to 25 tons.

Fruehauf engineers, the largest Trailer engineering staff in the industry, have designed models with either single or tandem axles, deck lengths to 22 feet, ample tie down rings and long-lived trouble-free underconstructions that are simple and functional.

For fast, economical loading of self-propelled equipment — for long trouble-free life, it's a Fruehauf Tilt-Deck that does the job best!

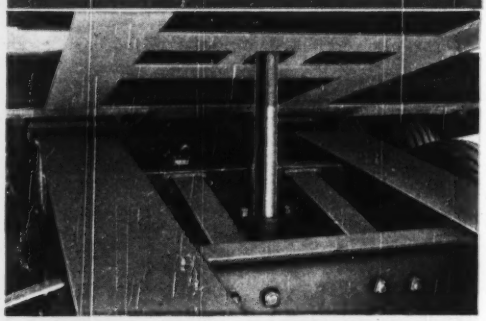
World's Largest Builders of Truck-Trailers

FRUEHAUF TRAILER COMPANY

DETROIT 32 • LOS ANGELES 58

IN CANADA: WESTON, ONTARIO

HYDRAULIC LOWERING DEVICE PERMITS *SAFE* LOWERING OF BED.



The optional hydraulic cylinder tilt control employs hydraulic pressure to insure safe, gentle lowering of deck as unit is loaded. *It is a strongly recommended extra.*

FRUEHAUF *Trailers*

WORLD'S LARGEST BUILDERS OF TRUCK-TRAILERS

MEN AND JOBS

Earl Withycombe and **Chas. E. Waite** have been made assistant state highway engineers for California, with Waite in charge of personal and public relations. He succeeds J. G. Standley, retired. Withycombe takes the place of Ridgway M. Gillis, advanced to deputy state highway engineer, succeeding Fred J. Grumm, retired. Withycombe was graduated from Oregon State University in civil engineering in 1911. In 1924 he became assistant construction engineer, and in 1931 staff highway engineer. He was promoted to construction engineer of the Division of Highways in 1931. Waite is a graduate of the University of Oklahoma in civil engineering. During his service with the state he has been a designer in Redding, assistant district maintenance engineer in Fresno, district engineer in Stockton, and design engineer in Sacramento.

Fred M. Sloane, division engineer of the Milwaukee Terminal, Madison and Superior Divisions of the Chicago, Milwaukee & St. Paul Railroad since 1932, has retired. A civil engineer graduate of Iowa State College, he joined the railroad in 1907.

Martin Ericson and **Charles Rhyne,** sanitary engineers who have been working out of the Gastonia, N. C. headquarters of the Gaston County Health Department, have been assigned to branch offices in the county. Ericson has been stationed at Mount Holly, and will supervise water and sewage construction and maintenance in Mount Holly, Lucia, Stanley, Dallas, Hardin, Ranlo and Lowell. Rhyne has been stationed at Cherryville and will serve in a similar capacity in Cherryville, High Shoals, Kings Mountain, and Bessemer City.

William J. Niemi, district engineer of the Alaska Road Commission at Anchorage, will be transferred to the headquarters office of the commission in Juneau as chief of the operations division. A graduate of the Colorado School of Mines, he worked with the Alaska Railroad and U. S. Smelting, Mining & Refining Co. before joining the road commission in 1930. He was assistant engineer in the Chitina district and assistant superintendent on the Anchorage-Palmer highway before the war, in which he served as colonel. Later he was with the Bureau of Reclamation on the Columbia Basin project.

Robert F. Coleman, acting city engineer at Wilmington, N. C., since April 15, has been named city engineer, succeeding Henry M. Von Oesen, resigned.

Lt. Col. T. H. Lipscomb, recently stationed in Turkey as head of the engineer section of the American Mission, has been appointed executive officer of the North Pacific division, Corps of Engineers, at Portland, Ore. Under Colonel Lipscomb's direction, the engineer corps of the Turkish army was reorganized to include some features like those of the U. S. Corps of Engineers.

G. L. Murray, left, and Panama Shiflett look over a Tennessee Gas Transmission Co., pipeline job in southern Texas. Murray is district superintendent for TGT; Shiflett is superintendent for Oklahoma Contracting Corp. on the job.

Lt. Col. Benjamin E. Meadows, CE, was recently assigned as Army Engineer, U. S. Army, Alaska. A graduate of Alabama Polytechnic Institute, 1928, he commanded the 8th Engineer Combat Squadron, 1st Cavalry Division and the 860th Engineer Aviation Battalion during World War II. Prior to his Alaskan assignment the colonel was post engineer at Fort Hood, Tex.

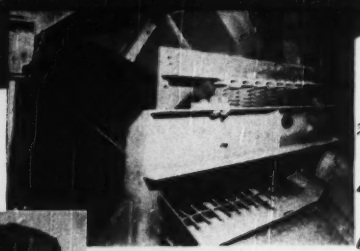
Week-old concrete in the arch ribs and thin-shell roof of the Onondaga County War Memorial Auditorium in Syracuse, N. Y., undergoes an inspection by Frank Stahl, left, of Ammann & Whitney, consulting structural engineers on the structure, and H. Vincent Edgarton, engineer member of Edgarton and Edgarton Architect-Engineer Associates, who designed the structures.

Maj. Clarence P. Hendricks, CE, has been appointed post engineer of the Army Medical Center, Washington, D. C. From 1944 to 1947 he served in the European theater, first as engineer and executive officer at Normandy Base Section District, then as Battalion commander of the 1302nd Engineer Regiment, and later as commanding officer of the 36th Engineer Combat Group in Austria.

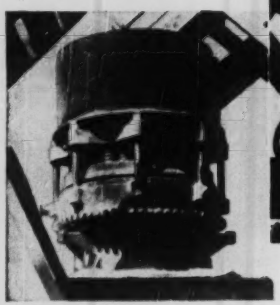
Crushing 500,000 Tons for Pennsylvania Turnpike

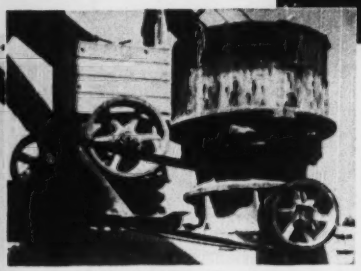
Eastern Extension

TELSMITH



Telsmith Scalping Screen





Telsmith Jaw Crusher
Telsmith Gyratory Crusher

Telsmith Gyrasphere Crusher

Telsmith Jaw Crusher
Telsmith Apron Feeder

Building the Pennsylvania Turnpike Eastern Extension brought an abnormally large demand for aggregate in Lebannon and Lancaster Counties. Pennsylvania Aggregates, Inc., built this completely new, Telsmith crushing plant at Cornwall to supply part of this temporary demand—about 500,000 tons in 15 months' time. Typically Telsmith, plant operation is smooth; up-keep is low; and production high—200-250 tons hourly, making a maximum of minus 2¼" in four different sizes.

TELSMITH Equipment in This Plant

42" x 14' Heavy-Duty Apron Feeder • 30" x 42" Roller Bearing Jaw Crusher • 30" x 150' Primary Conveyor • 5' x 12' 2-Deck Heavy-Duty Scalping Screen • 10" x 36" Roller Bearing Jaw Crusher • 13B Gyratory Crusher • 30" x 149' Conveyor • 5' x 12' 3-Deck Vibro-King Sizing Screen • No. 36 Fine Crushing Gyrasphere Crusher • 24" x 83" Return Conveyor.

Get Bulletin 266—Telsmith Complete Plant Service. Q-22

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MEETINGS

Milton M. Price of Bethesda, Md. has been elected president of the Prince Georges-Montgomery County Engineers Club. He succeeds Page Hopkins. Other officers: Vernon George, first vice-president; Robert McLeod, second vice-president; Charles Offenstein, secretary and Joseph Kordella, treasurer. Hopkins and Albert Hopkins, elected directors.

John I. Bahr, chief engineer of the National Vulcanized Fibre Co., was elected president of the newly-organized Delaware Society of Professional Engineers. Other officers: M. Allan Wilson, chief engineer of the Delaware State Highway Department, senior vice-president; Clarence H. Evans of the DuPont Co., vice-president; John D. Waddell of the Delaware Power and Light Co., secretary, and Andrew L. Bolton, Wilmington engineer, treasurer. Thomas B. Evans of the DuPont Co. is national director. Directors elected were Ernest S. Van Denmark, of Van Denmark and Lynch, civil engineers, and Leo Blumberg, head of the Engineering School, Pennsylvania Military College, and chairman of the Delaware State Registration Board for Professional Engineers and Land Surveyors.

William F. Nelson, Washington, D. C., building contractor, has been installed as president of the Washington Building Congress. He succeeds P.Y.K. Howat. Others installed for the 1950-51 term are: Thomas H. Locraft, of the architectural firm of Murphy & Locraft and Robert W. McChesney, of Harry Alexander, Inc., vice-president; W. E. Reynolds, Commissioner of Public Buildings, secretary and W.A.H. Church, of the lumber and millwork firm of W. T. Galliher & Bro., treasurer.

The Southeastern Association of State Officials has elected Dwight H. Bray, state highway engineer of Kentucky, president, with C. R. McMillan, chief highway commissioner of South Carolina, vice-president. The secretary-treasurer will be appointed by the incoming president.

The Roanoke Chapter of the Virginia Society of Professional Engineers has elected officers and adopted a provisional constitution. Lynn H. Morris was elected president. Other officers are: Alvan G. Walker, Jr., vice-president; W. E. Allen, Jr., secretary; and Archie C. Adams, treasurer. All the officers are from Roanoke.

CALENDAR

Virginia Section, AWWA, Jefferson Hotel, Richmond, Va., Nov. 6-7.

North Carolina Section, AWWA, Washington-Duke Hotel, Durham, N. C., Nov. 13-15.

Florida and Cuban sections, American Water Work Association, Ft. Lauderdale, Fla., Nov. 13-15.

National Reclamation Association, Hotel Davenport, Spokane, Wash., Nov. 15-17.

Building Research Advisory Board, Research correlation conference, National Academy of Sciences Bldg., Washington, D. C., Nov. 21.

Indiana Water Conservation conference, Purdue University, Lafayette, Ind., Nov. 28-29.

Arizona Sewage & Water Works Association, Pioneer Hotel, Phoenix, Ariz., Nov. 30-Dec. 2.

American Association of State Highway Officials, Miami, Fla., Dec. 4-7.

County Engineers of Iowa, Iowa State College, Ames, Dec. 6-8.

Building Industry Employers of N. Y. State, BTEA Clubrooms, 2 Park Ave., New York City, Dec. 14-16.

Pacific Coast officials adopt performance code

The Pacific Coast Building Officials Conference has about completed the task of converting their uniform building code from a specification to a performance code.

That was the principal accomplishment of the group's Oct. 3-6 meeting in San Diego, Calif., at which the code was subjected to a rather intensive overhaul.

The changeover began about 3 years ago. The latest revisions have about completed the task which conference officials believe essential for what they describe as a "really modern building code." The code has been adopted by great numbers of western cities.

The San Diego conference efforts were pointed toward the objective of "giving every material a fair shake." Conference executives explained that the biggest advantage of the revised uniform code is that it will permit any type of construction which can meet engineering performance tests. Codes are not cluttered with minute specification detail which become outdated with each new engineering advance in the materials business.

The conference re-elected A. W. Russell, building inspector for San Mateo County, Redwood City, Calif., as president, and also returned to office these other officers: Arthur G. Hoefer, Spokane, Wash., first vice-president; Gilbert E. Morris, Los Angeles, second vice-president; Cassatt D. Griffen, Los Angeles, treasurer, and H. F. Colling, managing-secretary.

Magic Word in Rope Buying

You don't have to be a magician—or even a mathematician—to order, stock or install any member of the Tuffy family of special purpose wire ropes. Just say or write "TUFFY!" to your Union Wire Rope distributor—plus the size, length and type required. Tuffy special purpose wire ropes will give longer service, handle more yardage or tonnage at a lower ultimate cost.

Tuffy SCRAPER ROPE..
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EDUCATION and RESEARCH

HHFA seeks design data for unstable soils

Studies are under way at the Southwest Research Institute, San Antonio, Tex., to develop design criteria for slab-on-grade foundations for small houses that are to be built on unstable soils. Included in the research, which is sponsored by the Housing and Home Finance Agency, is the development of test procedures for determining the degree of activity of unstable soils.

In many parts of the country, heaving or shrinking soils have been a serious problem in the design of low-cost foundations. The trouble is caused by change in the moisture content of soils containing a large percentage of fine particles, most authorities believe. These soils, such as gumbo and caliche, often incorporate bentonitic (disintegrated volcanic ash) clays. Neither chemical analysis nor accepted methods of soil analysis furnish reliable data for predicting the activity of these soils.

Southwest Research Institute is now investigating a device that would permit a soil sample to be subjected to various degrees of three-dimensional external restraint so that the expansive forces developed with gain in moisture content can be measured. The sample is placed in an elastic bag that is immersed in a fluid contained in a pressure tank. The volume of the sample will be measured at various pressures by observing the changes in volume of the fluid. This direct measurement of the activity of the soil may permit a reliable prediction of the activity of the soil at any particular site and allow economies to be effected in the structural design of foundations.

Impact on road bridges studied analytically

An analytical investigation of impact on highway bridges was begun at the engineering experiment station of the University of Illinois last summer. Its purpose is to provide a better theoretical basis for the planning of field tests and the interpretation of results obtained from such tests.

Cooperating agencies are the Illinois Division of Highways and the federal Bureau of Public Roads. The project is being continued in the structural research laboratory of the civil engineering department, under the direction of N. M. Newmark, research professor of structural engineering. Those participating in the work are: C. P. Siess, research associate professor, L. E. Goodman, research assistant professor, and T. P. Tung and W. H. Milley, research assistants, all in the civil engineering department.

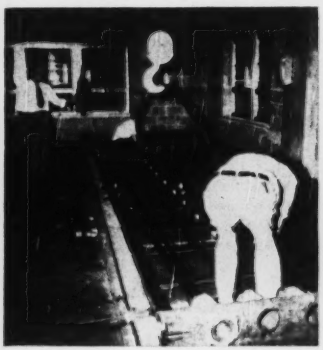
Engineering building dedicated – A new engineering building, costing about $1 million, was dedicated Oct. 13-14 by the University of New Hampshire, at Durham. It has been named Albert Kingsbury Hall for the late Prof. Kingsbury, inventor of the thrust bearing carrying his name. He taught at the university for ten years before going to Worcester Polytechnic Institute. Arland A. Dirham, Boston, is the architect and the Volpe Construction Co., Malden, Mass., built the structure.

NEW PRESIDENT OF TEXAS A&M COLLEGE—On Nov. 9, M. T. Harrington will be inaugurated as president of the Agricultural and Mechanical College of Texas, at College Station, Tex. This is one of the events of the 75th anniversary year of the college, which has a physical plant valued at more than $20,000,000, a student body of about 7,000 and a teaching staff of more than 500.

New director – William R. Osgood, former structural engineer for the David Taylor Model Basin at Carderock, Md., has been named director of the department of mechanics at the Illinois Institute of Technology, Chicago. Dr. Osgood was graduated from Harvard University in 1917 and was awarded a bachelor of science degree in 1919 at Massachusetts Institute of technology. He received his master's degree in 1926 and his doctor's degree in 1933, both at the University of Illinois. He joined the National Bureau of Standards in Washington in 1929.

PCA tests prestressed-concrete railroad trestle slab

STRANDS, ½ in. in diameter, composed of thirty-seven 5-mm wires, encased in plastic and fitted with socket-type end connections, were inserted in . . .



FORM for prestressed slab, which was 25 ft long, 7 ft wide and 18 in. deep, half the depth of a reinforced concrete slab of same design strength, for . . .

TEST made in the Portland Cement Association's new laboratory. First crack appeared at 1.5 times live load; failure occurred at 2.8 times live load.

STANDARD ENGINEER'S REPORT

DATA

PRODUCT Chevron Starting Fluid

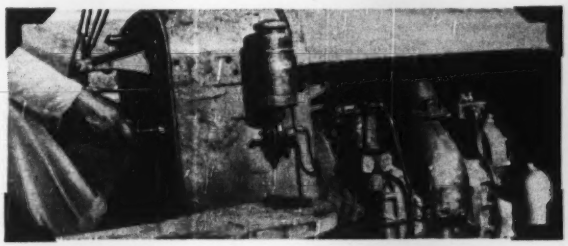
UNITS A. C. diesel engines HD-7 tractors

CONDITIONS 25° below zero weather—parked in open shed

EQUIPMENT Permanent primer with atomizers on blower

FIRM John W. Graves Heppner, Oregon

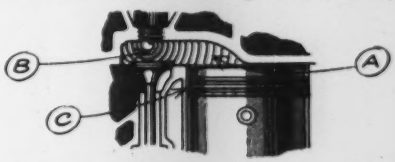
Engine starts on first turn at 25° below zero!



CHEVRON STARTING FLUID started this engine instantly every time during a severe Oregon winter, even when the tractor had been idle for several days in temperatures down to 25° below zero! John W. Graves, owner, says, "Power in the starter battery would last only for two or three revolutions of the engine, but Chevron Starting Fluid required only one turn to kick it off." With one or two strokes of the dash-mounted pump, fluid was forced from the storage tank (left center) into the "blower", before the starter button was pushed.

ATOMIZER NOZZLES, as shown on this diesel "blower", are also used to inject Chevron Starting Fluid into intake manifolds of gasoline engines. Complete primer equipment may be purchased from your fluid supplier. Chevron Starting Fluid comes in 3-pint cans, and capsules of two sizes—7CC's and 17CC's, packed 12 and 24 per can. It is approved by leading engine manufacturers.

How CHEVRON Starting Fluid Starts Gasoline and Diesel Engines Instantly



A. Atomizes in lowest temperatures and provides powerful, easily fired vapor in combustion chamber.

B. Pressure, or the weakest spark, fires mixture—turns engine and heats air for regular fuel mixture.

C. Contains lubricant and additives—prevent cylinder wear and ice formation in primer equipment.

HOT NEWS COLD ENGINES

FREE BOOKLET gives you more facts on Chevron Starting Fluid—shows where it should be applied in different type engines. Write or ask for it today.

CHEVRON STARTING FLUID

TRADEMARK REG. U.S. PAT. OFF

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THE CALIFORNIA OIL COMPANY • Barber, N. J., Chicago, New Orleans
STANDARD OIL COMPANY OF TEXAS • El Paso, Texas
THE CALIFORNIA COMPANY • Denver, Colorado

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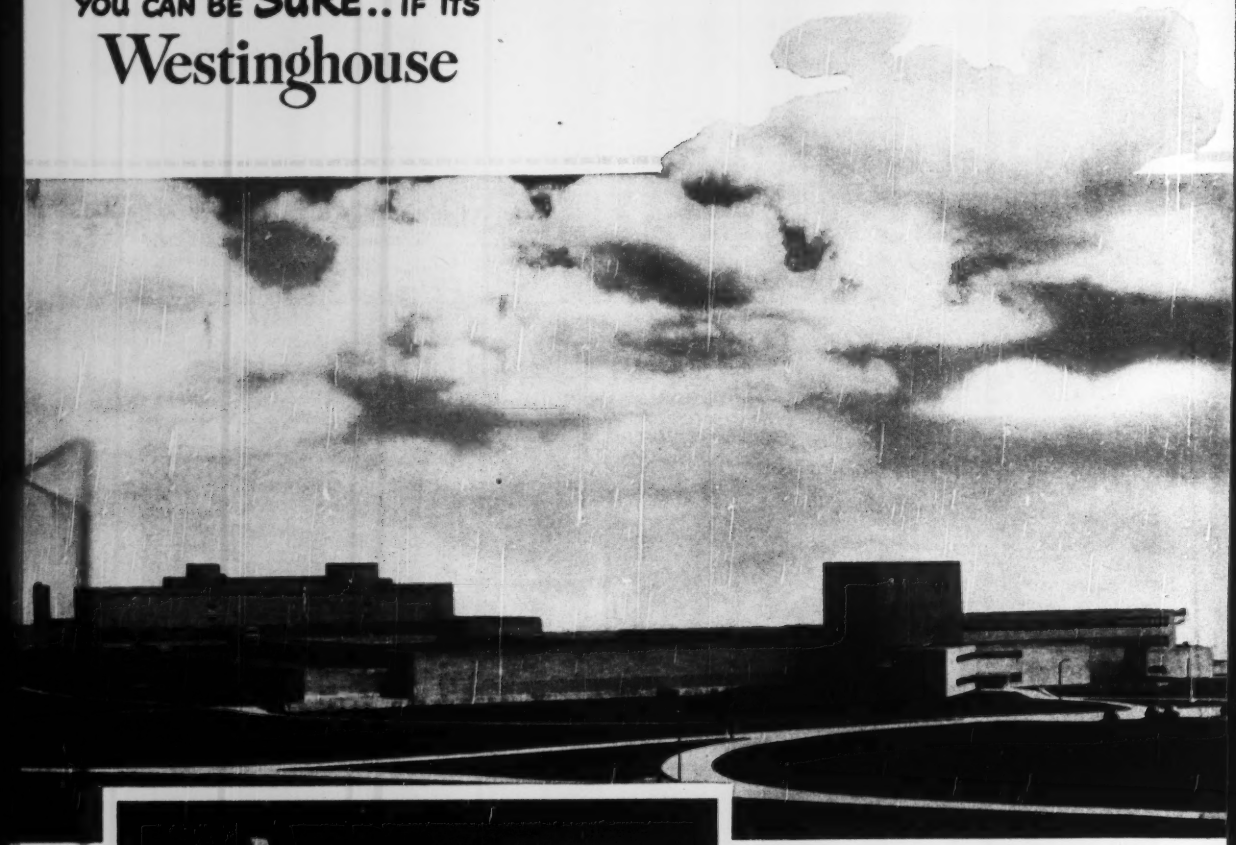
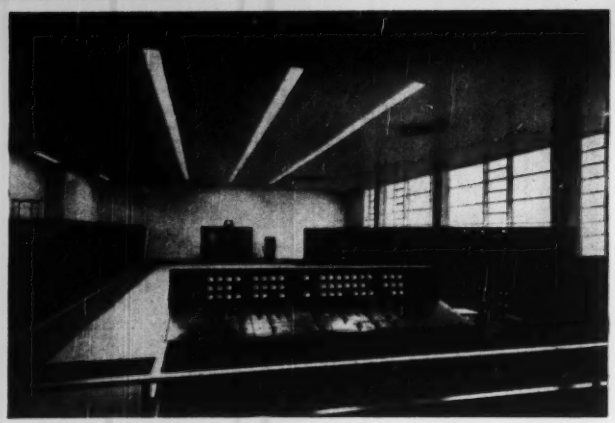
Westinghouse





The Chicago South District Filtration Plant shown here is the largest in the world, serving more than a million and a half people. The plant has operated at an hourly peak of 546 mgd with only 70 of the 80 filters in service.

This mezzanine switchgear room in the lower left pumping station is an example of the way Westinghouse designs and manufactures electrical equipment for a co-ordinated, efficient system. (Right) High-voltage switchgear gives necessary protection on incoming lines, as well as feeders, and supplies power to large pump motors and station transformers. (Left) Low-voltage switchgear controls station auxiliaries such as priming pumps, crane motor feeder and valves. (Rear center) Network protectors and 120/208-volt distribution for building lighting and miscellaneous power. (Front center) Control desk with mimic bus, indicating instruments and circuit breaker switches centralizes control of plant equipment.

Westinghouse

EQUIPMENT

FOR PUBLIC WORKS

Unit Responsibility

ASSURES WATER WORKS EFFICIENCY

For any water works, large or small, higher operating efficiency depends in part on your electrical manufacturer.

He should provide every type of electrical equipment . . . give you a co-ordinated engineering application . . . based on practical experience in water works electrification.

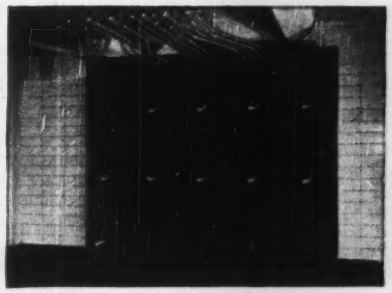
These elements add up to unit responsibility and mean reduced operating costs for your plant. You get them all from Westinghouse:

Westinghouse makes a complete line of electrical equipment for water works. This includes "Unitized" metal-clad switchgear; packaged power centers, power transformers and unit substations; control and control centers; motors and gearmotors, as well as other electrical apparatus and supplies.

Westinghouse Consulting and Application Engineers are available to work with you. They will help you select and apply the right equipment to give you a co-ordinated, efficient electrical system.

Westinghouse brings you a background of long experience in applying electrical equipment to water works. The Chicago South District Filtration Plant, shown here, is but one more in a large list of outstanding installations where Westinghouse unit responsibility has been *proved* on the job.

For help on your water works electrification problems, call your nearest Westinghouse District Office, or write to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-94818



This control center on the third floor of the Chemical Building groups into one unit all the combination linestarters and motor control for fan motors, agitator drives and other auxiliary equipment in this plant area.

These two 300-kva, 3-phase, 60-cycle, 2300 120-208-volt, liquid-filled distribution transformers are located in the west pump room and supply power for the building lights and equipment in the Filtration Plant.

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Provide exceptional pulling power, with the sharp energy of blow needed to vibrate and loosen stubbornly set piling. These double-acting extractors come in two standard models, heavy and extra heavy. Standardized line also contains 10 double-acting hammers and 5 single-acting hammers. Write for free Bulletin.

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UNIT PRICES BID BY CONTRACTORS

Pole Hill Power Plant, Colo.-Big Thompson Project

Unit prices in exceptional detail were taken on the Pole Hill Power Plant and access road, Colo., Sept. 20. The low at $741,740 was the only bid of 6 below the engineer's estimate—4.6% below. It was 15.5% below second low bid and 47.5% below high.

This Bureau of Reclamation job is the second large contract of the Estes Park-Foothills power aqueduct to be awarded in a month. The Rattlesnake Tunnel (ENR Sept. 28, '50) is under construction just east of the job site, 14 miles west of Loveland.

The work must be completed in 630 calendar days under a $300 per day penalty. It includes construction of earth and rock-fill diversion and afterbay dams; access road; power-plant building; penstock bypass check structure and flume, and afterbay outlet and siphon.

Minimum wages are: carpenters, $2.00 an hour; ironworkers, $2.10; power equipment operators, $1.45-$2.15; unskilled laborers, $1.40.

Bidders included:

1 Adler Construction Co., Dickinson, N. D. (Contract)	$741,740.00
2 A. S. Horner Const. Co., Denver	857,033.90
6 Peter Kiewit Sons' Co., Omaha	1,094,279.00
Engineer's estimate	775,732.00

Items	Quantity	Unit prices 1 C	2
Clear & grub for rd & strm chan improv	ls	$5,500	$12,000
Excavation			
Channel, common	cy	9,100	.70	2.65
rock	cy	23,000	1.70	2.65
Cut-off tr, all cl	cy	800	2.50	3.30
Div & dr ditch, pipe-line trench, com	cy	900	1.50	5.00
rock	cy	900	6.50	8.00
Str chan impr, com	cy	2,300	.75	2.10
rock	cy	2,300	2.35	2.10
Access rd, com	cy	24,000	.45	.40
rock	cy	9,300	2.25	3.00
A-rd struct, com	cy	270	3.70	1.50
rock	cy	270	3.70	5.00
Penstock, afterbay struct, com	cy	2,300	1.10	1.75
rock	cy	7,600	3.75	3.50
P-pl struct, com	cy	5,600	.90	1.75
rock	cy	7,500	3.75	3.50
Penstock, com	cy	500	2.50	1.35
rock	cy	13,000	2.50	4.20
Borrow	cy	11,300	.45	.40
Overhaul for a-rd	stacy	4,400	.03	.03
other than a-rd	micy	5,800	.35	.25
Compact earth fill after-bay dam	cy	5,400	.50	.75
switchyd, p-pl area embanks	cy	3,600	.60	.70
Water a-rd embanks	Mgal	200	4.00	5.25
Roll a-rd embanks	hr	54	8.00	10.00
Com div dit embank	cy	1,700	.70	.50
Backfill	cy	9,000	.30	.30
Compact backfill	cy	4,900	4.00	3.50
Riprap	cy	2,800	2.25	6.50
Grav bed under r	cy	190	5.00	4.85
Selec surf	cy	3,600	1.70	2.00
Dr holes for anchor bar, grout in place	lf	100	3.00	1.25
Grad sand-grav drains, furn matl & const				
With 6" sewer pipe	lf	270	3.50	3.00
With 4" sewer pipe	lf	150	3.00	3.30
Sewer pipe w cmtd joints, f & i	lf	50	2.50	1.25
Corrug metal pipe, f & i				
12" No. 16 gage	lf	160	2.10	3.00
24" No. 14 gage	lf	130	4.70	5.00
30" No. 14 gage	lf	120	6.00	5.80
36" No. 12 gage	lf	120	9.75	8.50
48" No. 12 gage	lf	44	13.00	14.00
54" No. 12 gage	lf	82	15.00	16.50
66" No. 10 gage	lf	46	22.00	23.50
CM arch culv, mpl-plate, 13 span, f & e	lf	100	41.00	43.00
17 span, f & e	lf	88	70.00	65.00
Vit clay pipe 4" f & l	lf	45	2.00	1.05
Clay dr tile, 4" f & l	lf	100	2.00	.90
Grav bed, f & p	cy	8	7.00	13.00
Reinf bars, f & p ½" & smaller	lb	100,000	.11	.138
5/8-7/8" incl	lb	230,000	.10	.125
1" & larger	lb	290,000	.10	.119
1st-stage conc in:				
P-pl substruct	cy	2,000	46.00	36.00
P-pl superstruct	cy	70	70.00	82.00
Concrete in:				
P-pl fill slab	cy	30	60.00	56.00
Blockouts	cy	9	60.00	300.00
Penstk, afbay struc	cy	1,800	50.00	66.00
A-rd struct	cy	110	50.00	54.00
Misc structs	cy	20	60.00	50.00
Cement, f & handl	bbl	6,000	5.20	4.60
Control jts, const	lf	55	3.00	2.50
Deby cork-type joint fill, f & p	sf	33	2.00	1.30
Metal seals, f & p	lf	1,200	2.00	1.80
Mtl stop in jts, f & p	lb	1,500	.50	.30
Rubr watr stops, plac	lf	260	1.50	.60
Roof insul, f & p	sf	6,000	.50	.60
Coal-tar-sat-felt roof, f & p	sf	6,000	.45	.27
St roll door, f & i	sf	580	5.00	4.50
Mtl fire doors, f & i	sf	68	7.00	8.00
St swing doors, f & i	sf	160	6.00	12.00
St-sash windw, f & i	sf	550	2.50	3.00
Storm-pr louvers, f&i	sf	12	8.00	6.00
Mtr-oper louver & prop-type fan, f & i	ls		250.00	600.00
Struc-st bldg fram, f&e	lb	310,000	.195	.16
St roof decks, f & i	sf	6,000	.75	.60
Alum & st panel walls, f & e	sf	16,000	2.80	2.70
Fram, seat, guid for blk hd, fix-wh gate, stp hog, i	lb	12,500	.15	.13
Fix-whl, blkhd gates, i	lb	14,000	.10	.12
Fix-whl gate hoist, i	lb	2,000	.15	.14
Cont equip, pipg, i	lb	1,000	.30	.20
Slide gates, hoists, i	lb	9,000	.10	.10
Crane & troly hoist, i	lb	150,000	.04	.042
Oil stor, mak-up tank, i	lb	21,000	.06	.04
Trashrack mtlwk, i	lb	16,000	.06	.035
Machine tools, i	lb	6,000	.10	.05
Track, rail in conc, f&i	lb	8,800	.22	.15
on timber ties, f & i	lf	95	5.00	25.00
Rock ballast	cy	45	6.00	5.00
St & WI pipe, fits, vlvs, 2" less, f & i	lb	1,100	.35	.70
2½-6", f & i	lb	5,200	.30	.67
Over 6", f & i	lb	3,100	.25	.80
Adj siph breakr for peak gate struc, f&i	lb	1,400	.55	1.20
CI soil pipe, fits, f & i				
Under 6"	lb	7,000	.30	.50
6" & over	lb	3,800	.25	.55
B & S CI watr pipe, fits, & wall castg, f & i	lb	6,700	.25	.35
Flanged CI watr pipe, fits, f & i	lb	3,000	.30	.35
Gate & plug dr vlv, f & i	lb	800	.45	.60
Embed mtl fram for p-pl floor, deck, wall openings, f & i	lb	71	1.00	.25
P-pl cov, grat & f & i	lb	740	.40	.40
Mtl fram, fl plat, grats for penst, af-bay struc & conc catch bsn, i	lb	800	.15	.15
Anchor bolts, f	lb	6,400	.20	.30
Anchor bolts, i	lb	7,200	.10	.60
Misc metalwork, f	lb	2,100	.50	.30
Misc metalwork, i	lb	3,100	.20	.15
Guard posts, f & set	ea	120	8.00	6.00
Fences, f & e				
Wire-cable guard	lf	1,300	3.50	3.00
Beam-type guard	lf	550	3.00	5.00
Barb-wire rt-of-wy	mi	4.7	1,300	1,600
Fence gates				
Barb-wire, f & i	ea	8	10.00	15.00
Metal, f & i	ea	5	65.00	40.00
Dbl drway, rem & e	ls		50.00	75.00
Catl. guard, rem & rec	ls		250.00	150.00
460-V fac at p-pl, f & i	ls		5,000	5,000
Embed elec mtl conduit 3/4", f & i	lf	1,200	.70	.45
1", f & i	lf	200	1.00	.65
1¼", f & i	lf	400	1.50	1.10
2", f & i	lf	250	2.00	1.35
4", f & i	lf	30	4.50	4.60
Embed elec nonmtl conduit 2", f & i	lf	400	2.00	1.10
3", f & i	lf	10	4.00	1.50
Expos elec mtl conduit 1", f & i	lf	300	1.60	.65
1¼", f & i	lf	300	2.10	1.05
2", f & i	lf	200	2.60	1.35
Main crane conductor angles, f & i	ls		1,000	600.00
Grnd wire, rod, f & i & mak grnd connect	lb	1,500	1.50	1.50
460-V recep o'let	ea	5	20.00	10.00
Trans matl RR site	T	420	5.00	7.00

• f—furnish i—install e—erect p—place a-rd—access road p-pl—power plant l—lay

Sealed-in PROTECTION

FOR YOUR INSULATED PIPING SYSTEMS

Whether your insulated piping carries steam, hot water, oil, or process liquids, it is given maximum sealed-in protection and efficiency by Ric-wiL Prefabricated Units.

In Ric-wiL HEL-COR Units the piping is insulated with the most efficient material to fit its specific thermal requirements. Both pipe and insulation are housed in a protective 16-gauge helically corrugated ingot iron conduit, hot-dipped galvanized. The outside is given a heavy coating of high-temperature asphalt and is tension-wrapped with asphalt-saturated asbestos felt. The inside is protected with multicoat, baked-on type Phenolic Resin.

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Simple, quick "on the job" field connections may be full-welded and the entire system air-tested for tightness, providing sealed-in protection for long and efficient service.

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OVERHEAD — THE RIC-WIL COMPANY · CLEVELAND, O. — UNDERGROUND

FOR FORTY YEARS THE GREATEST NAME IN INSULATED PIPING SYSTEMS

215 miles inside the Arctic Circle

Sydvaranger, A/S is moving 25 million yards of rock with 12 LeTourneau 40-ton rubber-tired haul units

At Kirkenes, Norway, 215 miles (346 km.) north of the Arctic Circle, approximately 25 million yards of rock (19,000,000 m³) are to be removed to uncover magnetite ore. Deepest point of excavation in the vast, open-pit mine will be about 350 feet (106 m.) below ground surface. Ultimate production goal is 2.3 million tons of ore annually. This calls for removal of 12,000 tons of rock and ore every 24 hours, year-around, in temperatures which range from 35° C below zero to 30° C above.

To achieve quickly and maintain this heavy production schedule, Sydvaranger, A/S, contracting firm from Oslo, Norway, assigned all hauling to a fleet of 12 LeTourneau big-capacity, rubber-tired Tournarockers. Carrying approximately 40 tons of rock each trip, these giant, rear-dump trucks haul from shovel to crushing plant at high speeds, dumping their loads at a touch of an electric switch. At start of operations, Sydvaranger originally brought in 6 of these modern hauling units, finding their performance so dependable and satisfactory, they added 6 more.

The enterprising Norwegian firm has also modernized pit and haul road maintenance with 2 LeTourneau high-speed Tournadozers (illustrated below). These mobile Bulldozers, rolling on giant tires, travel at speeds up to 19 m.p.h. (30.5 k.p.h.). They built the main haul road from mine to crushing plant, and handle clean-up around all shovels in the pit.

To you, this advanced earthmoving equipment can also mean lower costs and increased production on the projects in which you are interested. See your nearest LeTourneau Distributor, or write us direct for complete information.

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HIGH-SPEED, RUBBER-TIRED EXCAVATING • HAULING • LIFTING EQUIPMENT

OBITUARY

Albert W. Newton, 83, retired chief engineer of Burlington Railroad, died Oct. 9. He began service with the Burlington as construction engineer in 1903. He served as chief engineer from 1917 until his retirement in 1937, pioneering in working out track relocations necessitated by the introduction of modern light-weight trains.

Maj. James S. Benson, post engineer at Erie Ordnance Depot, Lacarne, Ohio, died Oct. 9. Formerly he was post engineer of Southern Luzon, U. S. Army Philippines Command, and before that in China.

John F. Charlton, 64, civil engineer and surveyor, died at Fort Lauderdale, Fla., Oct. 11.

Lee Puryear, 54, for 28 years an engineer with the Kentucky state department of highways, died at Paducah, Ky., Oct. 13.

Paul V. Colianni, 61, head of the railroad engineering firm of Colianni & Dire, Chicago, died Oct. 13. He served as a trustee of the Chicago Sanitary District from 1930 to 1948.

Cutler Clayton Burch, 56, contractor and builder of Erie, Pa., died Oct. 14. He had lived in Erie for 34 years.

Gust A. Nordland, 65, a building contractor in Jamestown, N. Y., for 35 years, died Oct. 15. He had constructed many industrial buildings in the Jamestown area.

William E. Davis, 55, Washington, D. C., contractor, died there Oct. 10. He was president of Harry H. Conrad, Inc. and served with the Army overseas during World War I. After that war, Mr. Davis and the late Harry H. Conrad established a contracting firm.

Arthur Frinsham Reaney, 64, assistant post engineer at Fort McNair, died Oct. 8 in Alexandria, Va.

Arthur E. Winslow, 73, dean emeritus, Norwich University, Northfield, Vt., died there Oct. 17. Professor Winslow was graduated from Norwich in 1898, and received his degree in civil engineering from Thayer School, Dartmouth College. He had served as the head of the department of civil engineering at Norwich since 1900 until 1945 when he retired.

Charles E. Margerum, 69, who retired as head engineer for materials in the

(Continued on page 73)

GOOD PUMPS FOR THE PROBLEM JOBS

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of

CORROSIVE AND NON-CORROSIVE LIQUIDS

Vertical submerged centrifugal pumps for handling abrasives, solids, grit; and for operation in deep pits.

Horizontal end-suction circulating pumps.

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SOLIDS-CARRYING LIQUIDS

Horizontal and vertical non-clog centrifugal pumps designed for handling solids—various styles and bearing constructions to meet individual needs. The Shone ® Pneumatic Ejector—operates by steam, air compressor or plant air supply.

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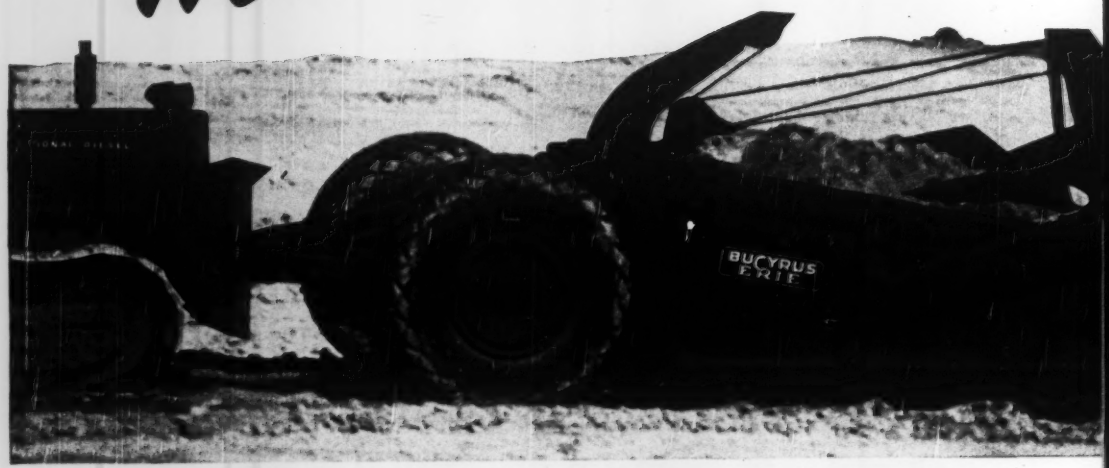
What Is Long Haul Dirt?

The BIG Makes Crawler



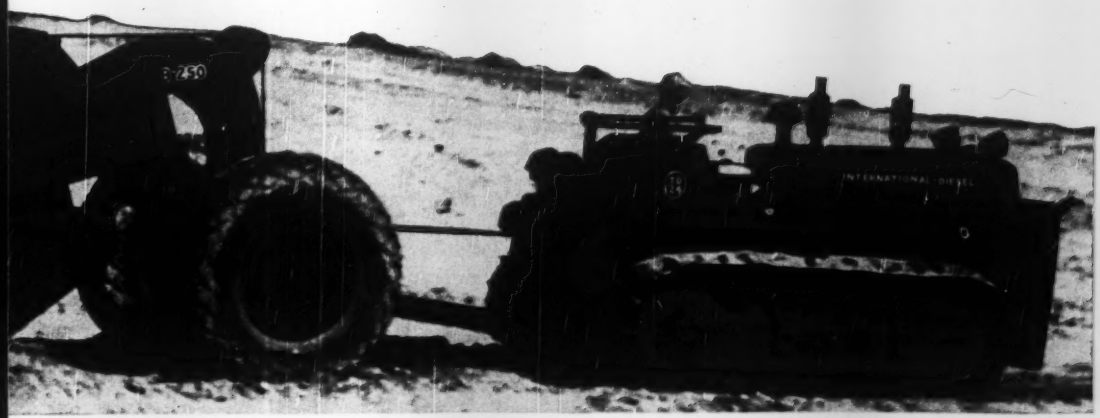
THE matched combination of an International TD-24 tractor and Bucyrus-Erie B-170 or B-250 scraper greatly extends the profitable limits of crawler tractor hauling. The BIG RED team loads more dirt, hauls it faster, dumps it more quickly, and returns on a shorter time cycle than any other crawler tractor-scraper combination.

It outperforms rubber-tired outfits, too, on much longer hauls than has generally been accepted. It works more days per year, stays on the job under conditions that stop rubber-tired equipment—bad weather, wet and slippery haul roads, wet fills. It cuts costs over rubber-tired units because

See Your INTERNATIONAL

RED Team Hauling Pay

Matched for Championship Dirt Moving



it eliminates the cost of supplementary power for loading and dumping, does away with the cost of maintaining haul roads. Its greater yardage, bigger percentage of total working time, and greater economy more than compensate for the added speed of so-called "long haul" equipment.

The BIG RED team, matched for championship dirt moving, revolutionizes the conception of crawler tractor-scraper possibilities for low cost dirt. Let us prove it to you!

1877SOC

BUCYRUS-ERIE COMPANY, South Milwaukee, Wisconsin

Industrial Tractor Distributor

THE matched combination of an International TD-24 tractor and Bucyrus-Erie B-170 or B-250 scraper greatly extends the profitable limits of crawler tractor hauling. The BIG RED team loads more dirt, hauls it faster, dumps it more quickly, and returns on a shorter time cycle than any other crawler tractor-scraper combination.

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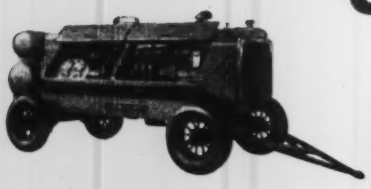
See Your INTERNATIONAL

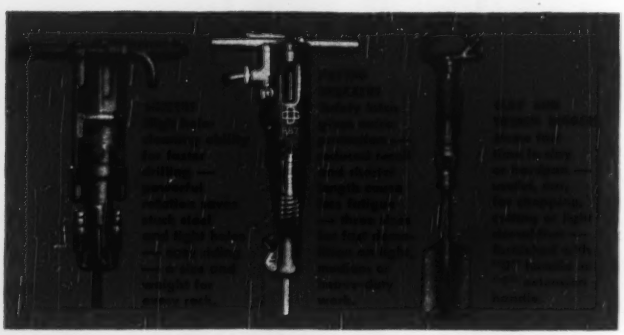
under bid  at a profit!

with these 3 way Gardner-Denver advantages

—More work from every crew—every shift
—A steady pace when the going gets tough
—Less "time out" for maintenance



PORTABLE COMPRESSORS—Two-stage, water-cooled—deliver top air capacity regardless of high elevation, desert heat or sub-zero weather. Sizes from 105 to 500 cu. ft.



BACKFILL TAMPER—Well-balanced for easy handling—ruggedly designed—seldom requires maintenance.

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1277SOC

BUCYRUS-ERIE COMPANY, South Milwaukee, Wisconsin

Industrial Tractor Distributor

Navy Bureau of Ordnance in January, 1949, died Oct. 10 in Washington, D. C. He began his government service at the Naval Gun Factory in 1917 and subsequently was made metallurgist-in-charge at the Naval Ordnance plant in South Charleston, W. Va. Later he became leading material engineer at the Bureau of Ordnance in Washington.

Roy W. Sweet, 77, retired civil engineer of Seattle, Wash., died Oct. 17 in Alameda, Calif. He was with the Milwaukee Railroad for 45 years, and helped to locate its main line through Snoqualmie Pass in the Cascade Mountains east of Seattle.

Roscoe C. Holmes, 70, Orchard Park, N. Y., contractor, was fatally injured in an automobile accident near Jamestown, N. Y., Oct. 20. He was president of the Holmes & Murphy Construction Co. and had been in the highway and general contracting business since 1917. He was president of the New York State Chapter, Association of General Contractors of America. For several years he had been in partnership with his two sons, Carlton B. Holmes and Clinton R. Holmes.

Parker F. Soule, 90, for many years a building contractor at Boston, Mass., died in that city Oct. 21. A member of the L. P. Soule & Son Construction Co., he directed the construction of many important office buildings, including Tremont Temple and the Federal Reserve Bank.

Rafael Guastavino dies; inventor of Timbrel Arch

54 carloads unloaded and loaded into trucks in 8 days at one site

Here's "big-job proof" of Bantam speed and economy! On 380-mile natural gas line project from Worland, Wyoming to Baker, Montana, DUNN BROS. of Dallas, Texas is handling *all pipe unloading and re-loading with one 5-ton capacity truck-mounted Bantam crane.* Equipped with 35' boom and power-controlled lowering, Dunn's fast-swinging Bantam quickly handles 50' sections of 12¾" dia. pipe (1600 lbs. each) . . . *unloads 36 to 42 pipes from railroad car in 8 to 10 minutes . . . re-loads 18 sections per truck in 8 minutes.* When last section is loaded at one spot, 35 MPH Bantam high-balls over highway to next unloading site, *thus eliminating need for extra men and machines.*

under bid at a profit!

with these 3 way Gardner-Denver advantages

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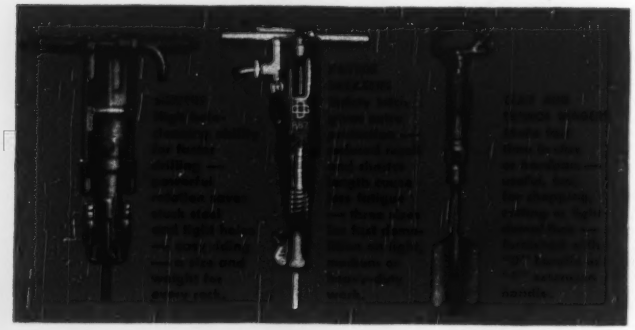

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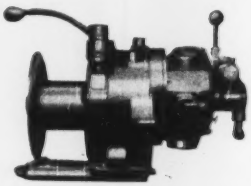

AIR HOISTS—Smooth, flexible hoisting power assures accurate load spotting—for 1250 to 3000 pounds rope pull.

L012 LINE OILER—Completely automatic—shuts off air when empty—protects your valuable air tools against "dry runs."

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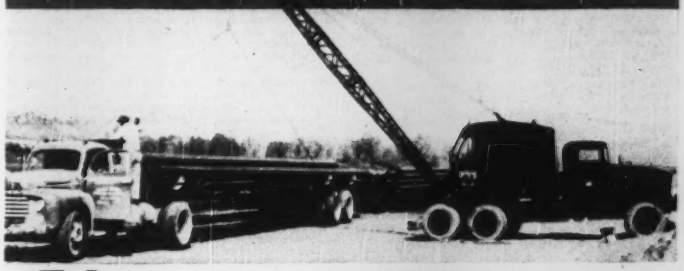
Rafael Guastavino dies; inventor of Timbrel Arch

Rafael Guastavino, 78, engineer and architect, who invented the Timbrel Arch, a system of interlocking tile, died in New York on Oct. 19.

His arch was first used in the Cathedral of St. John the Divine, New York, in the early 1900's.

The Timbrel Arch system provides masonry construction without the use of steel scaffolding or complicated braces. The great dome of the Cathedral was the first such dome built without false work or scaffolding—a daring architectural feat. Mr. Guastavino began laying thin terra cotta tile. Six or seven thicknesses of tile were laid one over the breaking joint of the other in a special cement of plaster of paris. The next course, laid in cement, was held in place by overlapping the tile below, and the process was repeated to completion.

380 miles of pipe handled by BANTAM at scattered locations



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Send details on truck-mounted Bantam

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Title

Name

Company

Address

City State

†Reg. U.S. Pat. Off.
*Less truck, F.O.B. Waverly, Iowa.
Prices subject to change without notice.

SCHIELD BANTAM†

Costs less . . . travels 35 m. p. h.

GETS MORE JOBS DONE

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager — *J. A. MAHONEY, Reports* — *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

S. C., Greenville—B.A. 11/7—Greenville Comn. P. Wks., City Hall, 2 treating stations, and alterations, adn. to an existing treating station. Black & Veatch, 4706 Broadway, Kansas City 2, Mo., consult. engrs.

O., London—B.A. 11/10—Dpt. P. Welfare, John H. Lamneck, dir., 534 E. Rich St., Columbus, Zone 15, 150,000 gal. elevated steel tank at London Prison Farm. CD 12/6/49.

W. Va., Fairmont—B.A. 11/10—City, City Bldg., water distr. sys. addn. Plans deposit $15. Blundon, Snyder & Small, Law Bldg., Kayser, engrs. CD 4/10.

SOON LETS CONTRACT

Colo., Ordway—Lake Henry Reservoir Co., J. G. McConnell, pres., Ordway, soon lets contract Lake Henry Reservoir Dam imprvs., near here. R. J. Tipton & Assocs., 602 Insurance Bldg., Denver, archts. and engrs.

LOW BIDDERS

Calif., Oakland—East Bay Municipal Utility Dist., 512 16 St., Oct. 13, installing 8,600 lin. ft. 6- to 12-in. asbestos cement and welded steel water mains, Spec. LS-521, Contra Costa Co., from O. A. Fogelberg, Mt. Diablo Blvd. and Elizabeth St., Lafayette, $37,083. CD 7/17/46.

Colo., Denver—Bd. Water Comrs., City and County Bldg., Oct. 10, Moffatt Filter Imprvs. vicinity of W. 20 Ave. between Kipling Ave. and Daniels Rd., from Lindstrom & Williams, 935 Colorado Blvd., $154,999. Est. $388,200. CD 9/26.

Md., Hyattsville—Washington Suburban Sanitary Comn., Hamilton St., rejected bids Oct. 16, Contr. 255 W&S, 430 ft. 6 in. c.i. water mains, 21,130 ft. 6- to 10-in. plain concrete or vitr. sewers, 6,200 ft. 6- to 10-in. plain concrete or vitr. sewer house connections in Glen Echo Heights, Montgomery Co. L. B. $230,395. Will re-advertise. CD 10/10.

Md., Hyattsville—Washington Suburban Sanitary Comn., Hamilton St., Oct. 16, Contr. 803 W&S, water and sewer mains in Sect. 5 of Langley Park, from Nickles Brothers. 4707 Baltimore Ave., $49,756. CD 10/10.

CONTRACTS AWARDED

Colo., Trinidad—City, City Hall water plant, Sects. 1, and 5, to Carruthers Co., Paola, Kan., $355,000 and $28,500 respectively; Sect. 2-A, to E. W. Bacharach & Co., Rialto Bldg., Kansas City, Mo., $79,213. Grand total $262,713. Black & Veatch, 4706 Broadway, Kansas City, Mo., archts. and engrs.

Md., Hyattsville—Washington Suburban Sanitary Comn., Hamilton St., Contr. 827 W&S, water and sewer mains, in Donnybrook Estates, Silver Spring, to M. Cain Co., Inc., 3315 8 St. N.E., Wash., D. C. $35,258. Bids 10/16, awarded 10/18. CD 10/10.

Mass., Cambridge—City, P. Wks. Dpt., City Hall, WW imprvs., Fresh Pond area, to R. Zoppo, 842 Providence Highway, Norwood, $833,230. Bids 9/13, awarded 10/10. CD 9/20, under LB.

▲ **Okla., Tulsa**—City, City Hall, Spavinaw dam on near Jay, to Guy H. James, First Natl. Bldg., Oklahoma City, Zone 2, $2,407,575. Est. $2,555,600. Bids 10/13, awarded 10/18. CD 10/17, under LB.

Tex., Alvarado—City, WW imprvs., own forces. $38,000.

Tex., Avinger—City, c.i. water lines, own forces. $34,500. CD 4/10/47.

Tex., Dallas—George A. Jackson & Assoc., 1806 Main St., water lines, supply on portion 425 acre tract, by Garland and Jupiter Rds. and Easton St., own forces. $65,000. CD 10/6.

Tex., Pleasant Grove (Dallas P. O.)—Pleasant Grove, c/o C. H. Bruton, Buckner Blvd., Dallas, water lines, own forces. $33,500. Koch & Fowler, Gr. Natl. Life Bldg., Dallas, engrs.

Ont., Brantford—Public Utilities Comn., E. L. Gothard, secy., supplying erecting elevated steel water tank, to Horton Steel Works Ltd., Fort Erie. Approx. $125,000. Bids 8/28. CD 8/24.

SEWERS, WASTE DISPOSAL

BIDS ASKED

Ill., Libertyville—B.A. 11/7—Village, Village Hall, sewage disposal works expansion. $300,000. Censor, Townsend & Assoc., 351 E. Ohio St., Chicago, Zone 11, engrs. CD 6/30.

La., Monroe—B.A. 11/9—City, sanitary sewer facilities in Sewerage Dist. C & F, and sewerage sys., addn. Barnard & Burk, Triad Bldg., Baton Rouge, engrs.

Calif., Dixon—B. A. 11/14—City, City Hall, sewage treatment plant addns. Approx. $50,000. Plans deposit $25. John S. Bates, 3134 Eton Ave., Berkeley, engr. CD 1/3.

LOW BIDDERS

▲ **Calif., Los Angeles**—City Bd. P. Wks., City Hall, constr. efutriation and sludge concentration system and misc. work at Hyperion Activated Sludge Plant in ElSegundo from Peter Kiewit Sons Co., 345 Kieways Ave., Arcadia, and Fred J. Early Junior Co., Inc., 22124 S. Vermont Ave., $2,122,500. CD 10/10.

Calif., Oakland—East Bay Municipal Utility Dist., 512 16 St., Oct. 13, installing Sect. 2 of Alameda interceptor, incl. 6700 lin. ft. rein.-con. 54 to 60-in. sewer pipe, Spec. SD-56, Alameda, from McGuire & Hester, 796 66 Ave., $277,946. CD 10/5.

Calif., South San Francsco and San Bruno—Cities of San Francisco and San Bruno, City Halls, Oct. 16, joint sewage treatment plant, from M. & K. Corp., 405 Montgomery St., San Francisco, $892,691. CD 9/19.

Va., Arlington—Arlington Co., Court House, Pimmitt Run Sewage Pumping Station, from Rogers & McGrath, 132-3 St., Wash., D. C., $101,700. CD 3/30/45.

CONTRACTS AWARDED

Calif., Anaheim—Orange County Joint Outfall Dist., Anaheim, 51,320 ft. 39-to 78-in. rein.-con. sewer pipe for Magnolia-Cannery Sewer Disposal trunk line, to American Pipe & Constr. Co., 4635 Firestone Blvd., South Gate, $877,023. Bids 10/3, awarded 10/13. CD 10/10, under LB.

Md., Hyattsville—Washington Suburban Sanitary Comn., Hamilton St., Contr. 244 S, 710 ft. 15 in. RCSP, 7,090 ft. 24- to 30-in. RCDP and RCCPX sewers, Indian Creek Trunk Sewer from Northeast Branch to Branchville Rd., Prince Georges Co., to Leo Butler Co., 8416 Georgia Ave., Silver Spring, $154,266. Bids 10/16, awarded 10/17. CD 9/29.

N. M., Santa Fe—City, City Hall, sanitary sewers, sewage treatment plant addns., to P. R. Burn, Las Cruces, $546,504. Est. $600,000. Awarded 10/6. CD 4/14.

Ore., Salem—City, City Hall, construct Madison St. grainage, to H. C. Werner, Inc., Eugene, $90,265. Awarded 10/13. CD 6/2/48.

Pa., New Cumberland—New Cumberland Boro Auth., New Cumberland, sanitary sewerage sys., Sect. 1, to Intercounty Constr. Co., 4720 Baltimore Ave., Hyattsville, Md. $849,875. Bids 9/15. CD 9/22, under LB.

▲ **Pa., Phila.**—Dpt. P. Wks., City Hall Annex, storm relief sewer, G St., to Oxford Constr. Co., 16 S. Broad St. $1,768,998. Bids 10/13. CD 9/26.

Tex., Avinger—City, sanitary sewer lines, own forces. $55,000. Royce & Wisenbaker & Assoc., Box 113, Tyler, engrs.

Tex., Dallas—George A. Jackson & Assoc., 1806 Main St., storm sewers, $68,000; sanitary sewers, $78,000, on portion 425 acre tract, by Garland and Jupiter Rds. and Easton St., own forces. CD 10/6.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $28,000; other public works $50,000; industrial buildings $68-000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
B.A. Bids Asked
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

Tex., Pleasant Grove (Dallas P.O.)—Pleasant Grove, c/o C. H. Bruton, Buckner Blvd., Dallas, storm sewer, drainage, own forces. Approx. $50,000. Koch & Fowler, Gr. Natl. Life Bldg., Dallas, engrs.

BRIDGES

BIDS ASKED

† **Maryland**—B.A. 11/17—At office H. J. Spelman, div. engr. Bureau P. Rds., Dpt. Commerce, 1440 Columbia Pike, Arlington, Va.,

Anne Arundel Co.—rein.-con. structures, approaches 0.067 mi. Baltimore-Washington Parkway, Proj. 142. Plans deposit $10.

† **Oregon**—B.A. 12/1—U. S. Eng., 628 Pittock Block, Portland, Zone 5, fabrication, erection superstructure for steel truss and girder span railroad bridge at upper crossing of Middle Fork, Willamette River, between approximate railroad Stations 2005 plus 78 and 2015 plus 89. Work is part of relocation of Southern Pacific Company's Cascade Line R. R. at site of Lookout Point Dam Reservoir, southeasterly from the railroad station of Jasper, Lane Co., Serial No. CIVENG 35-026-51-92.

LOW BIDDERS

Calif., Santa Rosa—Sonoma Co., Court House, Oct. 16, steel girder bridge over Dry Creek, on Healdsburg Stewarts Point Rd., from Dan Caputo, Rt. 1, Box 397, San Jose, $83,425. CD 8/1/45.

Missouri—State Hy. Comn., Jefferson City, rejected bids Oct. 4, two 9 ft., 10 ft. continuous slab spans, Sta. 202 plus 58 over Boone Creek, widened from 18 ft. to 24 ft., Rte. SJ, road from Franklin Co. line S. E. to Bourbon, Proj. S 1145 (1), Crawford Co., CD 9/25.

Texas—State Hy. Comn., Austin, Oct. 18, Neuces River Bridge and approaches (rein.-con.) 0.196 mi. Hy. FM 666, Proj. R. 1052-3-1, San Patricio Co., from Austin Bridge Co., P. O. Box 1590, Dallas, $66,108, est. $70,000***Nolana Creek and Peppers Creek Bridges 0.187 mi. Hy. U. S. 81, FI 644 (5), Bell Co., from Ernest Loyd, P. O. Box 1120, Fort Worth, Zone 1, $377,813, est. $356,000***Trent Lake Bridge and approaches Hy. U. S. 271 C 221-3-18, Red River Co., from John T. Leslie, Waxahachie, $77,461. CD 10/5.

STREETS AND ROADS

LOW BIDDERS

▲ **California**—State Div. Hys., Sacramento, Oct. 18, c. conc., plant mix surf., constr. hy. separation structures 4.2 mi. Eastshore Freeway between Lewelling Blvd. and 0.1 mi. north and south city limits of Oakland, Alameda Co., from Frederickson & Watson & M&K. Corp., 873 81 Ave., Oakland, $2,871,212. CD 9/19.

† **Calif., Camp Roberts**—U. S. Eng., 180 New Montgomery St., San Francisco, Oct. 14, rehabilitation roads, paved areas and drainage areas, Spec. 04-20-51-27, from Madonna Constr. Co., 581 Higueras St., San Luis Obispo, $110,659.

Illinois—State Div. Hys., Springfield, Oct. 20, bit. resurf. 2.43 mi. Ill. Route 5, Cook Co., from Standard Paving Co., 30 N. La Salle St., Chicago, Zone 2, $528,498*** c. conc. 9.91 mi. U. S. Route 50, Richland and Lawrence Counties, from O'Connor Constr. Co., 614 Reisch Bldg., Springfield, $1,066,296***bit. resurf. 3.42 mi. U. S. Route 67, Madison Co., from M. Hoeffken Co. & Hoeffken Bros. Inc., 222 W. B St., Belleville, $718,059***c. conc. 1.27 mi. Ill. Route 12, Lake Co., from E. A. Meyer Constr. Co. 1539 Morrow Ave., North Chicago, $440,444***grading 0.28 mi. Ill. Route 122, Cook Co., from Krug Excavating Co. 7301 S. Prairie Ave., Chicago, $152,861***bit. resurf. 0.6 mi. Ill. Route 13, Williamson Co., from Wm. Lough & Sons, 305 S. Granite St., Marion, $125,385. CD 10/4.

Ill., Chicago—Cook Co., County Bldg., Zone 2, paving Edens Superhighway from Foster to Hiawatha Aves., near here, from Peter J. Crowley Co., 12 Broadview Rd., Maywood, $666,758; paving Church St. from Austin Ave. to W Waukegan Rd., near here, from Robt. A. Black Inc., 10 E. Erie St., Zone 10 $165,271. CD 11/3/49.

Missouri—State Hy. Comn., Jefferson City, rejected bids Oct. 4, graded earth, surf. 4.437 mi. Rte SJ, road from Franklin Co. line southeast to Bourbon, Proj. S 1145 (1), Crawford Co. CD 9/25.

▲ **Texas**—State Hy. Comn., Austin, Oct. 18, flexible base, one course surf. tr. 8.662 mi. Hy. FM 109. Proj. S 1113 (3), Austin Co., from Wendell Constr. Co., El Campo, $179,687, est. $187,000***roadbed tr., one course surf. tr. 7.713 mi. Hy. FM 1192, Proj. R 1513-2-1, Johnson Co., from John F. Buckner & Sons, P. O. Box 76, Cleburne, $80,649, est. $72,000 ***flexible base, one course surf. tr. 4.847 mi. Hy. FM 1592, R. 1510-1-1, Sabine Co., from Foley & Williams, 243 Owen Bldg., Tyler, $71,666, est. $75,000***flexible base, one course surf. tr. 6.721 mi. Hy. FM 843, R. 1164-1-1, Angelina Co., from T. R. Vardeman, Sr., Nacogodoches, $70,853, est.

(Continued on page 76)

Platforms that meet millions of footsteps gain longer life with MONSANTO PENTAchlorophenol

(SANTOPHEN 20)

A MONSANTO PENTA formulation, applied by pressure, is used as the preservative in the southern yellow pine and gum decking of the platform shown above in the photograph of the Illinois Central Suburban Station at 83rd Street, Chicago.

The Illinois Central Railroad—one of the nation's great mass transportation systems—is using Monsanto PENTAchlorophenol as a wood preservative in the platform decking at its 83rd Street suburban station in Chicago. PENTA pressure treatment of wood adds life to platforms that must endure millions of passenger footsteps by controlling insects and fungi under varying weather conditions.

PENTA makes the decking *safer* because it *resists decay* and remains strong . . . because it never becomes slippery due to the preservative coming to the surface in hot weather. PENTA, properly formulated, is a *clean treatment* that does not soil shoes or clothing. Paintable surfaces also are possible with PENTA.

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PENTA, a chemical compounded specifically to preserve wood, always is *uniform* in effectiveness when properly applied by brushing, dipping or pressure. It is a long-lasting preservative that penetrates further into the wood as time goes on.

Your problem may be a station platform . . . a loading dock . . . a floor subjected to moisture . . . any wooden structure exposed to weather. Whatever its nature, learn how you can make wood last longer by using PENTA. Mail the coupon or contact the nearest Monsanto Sales Office for information on PENTA. MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1759-J South Second St., St. Louis 4, Missouri.

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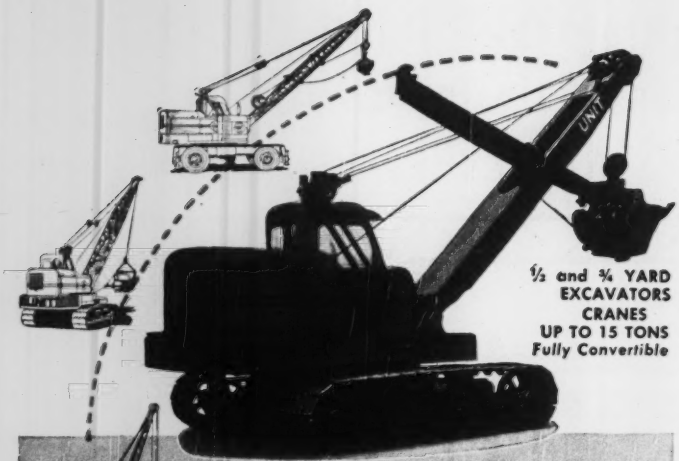

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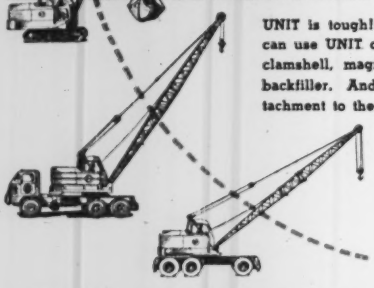

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(Continued from page 74)

$75,000***fdn. course, one course surf. tr. 13.663 mi. Hy. FM 1474 and 1467, R. 480-6-2, Brown Co. from A. L. Bucy, Brownwood, **$85,349**, est. $73,000.

Fdn. course, two course surf. tr. 10.417 mi. Hy. FM 1314, R. 1126-1 and 2-2 and 1, Hale Co., from Bryan & Hoffman, Plainview, **$95,450**, est. $80,000***flexible base, one course surf. tr. 10.481 mi. Hy. FM 1245 and FM 1244, R. 1191-3-1, Limestone Co., and fdn. course, one course surf. tr. 9.1494 mi. Hy. FM 56, R. 398-1-6, Bosque Co., from Callan Constr. Co., P. O. Box 3146, Westview Station, Waco, **$134,940**, est. $130,000, and **$80,793**, est. $68,000 respectively***flexible base one course surf. tr. 8.978 mi. Hy. FM 185, R. 567-2-1 and R. 567-4-1, Coryell and McLennan Counties, from Thomas & Ratliff, Rogers, **$82,544**, est. $119,000***grading, structures 14.896 mi. Hy. FM 198 and 895, Proj. V763-2-1 and V 1174-1-2, Delta Co. from Ernest Loyd, P. O. Box 1120, Fort Worth, Zone 1, **$93,902**, est. $78,000***shell concrete base, asph. surf. and structures 0.769 mi. Hy. SH 36 and 288, C 188-6-14 and C 111-8-23, Brazoria Co. from Harrison Eng. & Constr. Co., 4638 Mill Creek Parkway, Kansas City, Mo., **$92,944**, est. $70,000.

Hot mix b. conc. 6.123 mi. Hy. US 82, 271 and SH 24, C 45-8-20, etc., Lamar Co., from Uvalde Constr. Co., P. O. Box 3027, Dallas, **$77,622**, est. $74,000***flexible base c. conc. paving, asph. stab. and two course surf. tr. 5.176 mi. Hy Loop 187 and SH 121, Proj. F 1085 (8), Denton Co., from Austin Road Co., P. O. Box 1590, Dallas, Zone 1, **$198,181**, est. $175,000***flexible base, two course surf. tr. and hot mix b. conc. paving 4.523 mi. Hy. SH 326 and U. S. 90, Jefferson Co., from Trotti & Thomson, Inc., P. O. Box 70, Beaumont, **$209,397**, est. $205,000*** fdn. course two course surf. tr. 10.976 mi. Hy. FM 1564, V 1496-1-1 and V 641-1-5, Hunt Co., from R. W. McKinney, Nacogodoches, **$164,434**, est. $158,000***flexible base, two course surf. tr. 9.289 mi. Hy. FM 1465, R. 748-4-2 and RV-748-4-1, Frio Co., from Schwope Bros., 6633 W. Commerce St., San Antonio, Zone 7, **$140,457**, est. $164,000*** soil asph. base, one course surf. tr. 6.836 mi. Hy. FM 1391 and 1392, R. 1396-1-1, Kaufman Co., from R. N. Adams, Kaufman, **$98,184**, est. $115,000. CD 10/5 and 10/3.

† **Tex., Roma**—International Boundary & Water Comn., U. S. A. and Mexico, U. S. A. Sect., P. O. Box 1859, El Paso, Tex., Oct. 13, road and street constr. and hard paving for Falcon Dam Village and area, from H. B. Zachry Co., Box 2570, San Antonio, **$121,562**. Est. $50,000. CD 10/2.

▲ **Virginia**—State Hy. Dpt., Richmond, Oct. 17, straightening, wid'n 4.75 mi. and two bridges Route 5 between Richmond and Charles City C. H., Henrico and Charles City Counties, from **T. F. Franklin, R. F. D. 2, Salem, $144,261***wid'n 0.34 mi. southbound lane of Petersburg Pike, from Hull to Maury Sts., U. S. 1, Richmond City, from Atlantic Blutlithic Co., 1400 Roseneath Rd., Richmond, $59,591***constr. 0.93 mi. U. S. 11 in the city of Radford, Montgomery Co., from McDowell & Wood, 1308 Main St. W., Salem, $75,832***hard surf. 4.96 mi. Secondary Route 37, south of Shawsville, Montgomery Co., from H. R. Nuckols, Hollins $97,088***divided hy. and 2 bridges 4.43 mi. U. S. 11 between Elliston and Christiansburg, Montgomery Co. from Albert Bros. Contractors, Inc., 1102 Tennessee St. W., Salem, $781,792.** CD 10/4.

CONTRACTS AWARDED

Colorado—State Hy. Dpt., Denver, grading, structures, oil processed surf. 6.843 mi. State Hy. 2, between Steamboat Springs and Rabbit Ears Pass, Colo. Proj. F 005-2 (6), Routt Co., to Lowdermilk Brothers, 140 S. Elati St., Denver, $516,824. Est. $430,149. Bids 9/8, awarded 9/9. CD 9/15, under LB.

† **New Mexico**—Bureau Pub. Roads, Dpt. Commerce, New Custom House, Denver, Colo., 7.608 mi. Forest Hy. Proj. 35-A3, Alamogordo-Cloudcroft, Otero Co., to Brown Contg. Co., Albuquerque, **$137,771**. Bids 10/5, awarded 10/7. CD 9/15.

▲ **Ohio**—State Hy. Dpt., Columbus, Zone 15, c. conc. Type T-71, construct 5 span steel, concrete bridge No. HA-74-77; 3 span steel concrete Bridge No. HA-125-79 S. R. Nos. 561, 74, 125, Hamilton Co., to Vest & Bartell, 4438 Appleton St., Cincinnati, **$2,076,467**, est. $2,147,000***paving, Type T-71, U. S. R. 23, Delaware Co. to V. N. Holderman & Sons, Inc., 890 Oakland Park Ave., Columbus, **$277,621**, est. $336,100***traffic compacted surf. course, 3 span, concrete, steel Bridge No. C-25-236, C. R. Nos. 25, Washington Co., to The Kent Bros. Co., 22 E. Gay St., Columbus, $79,270, est. $86,800***paving Type T-32 on B-11, C. R. No. 17, Meigs Co., to Goodin Coal Co., Box 389, Pomeroy, **$96,005**, est. $112,400. Grand total $2,529,363. Bids 10/10. CD 9/29.

Tex., Dallas—George A. Jackson & Assoc., 1806 Main St., street constr., drainage, hard-paving, portion 425 acre tract, by Garland and Jupiter Rds. and Easton St., own forces, **$85,000**. CD 10/6.

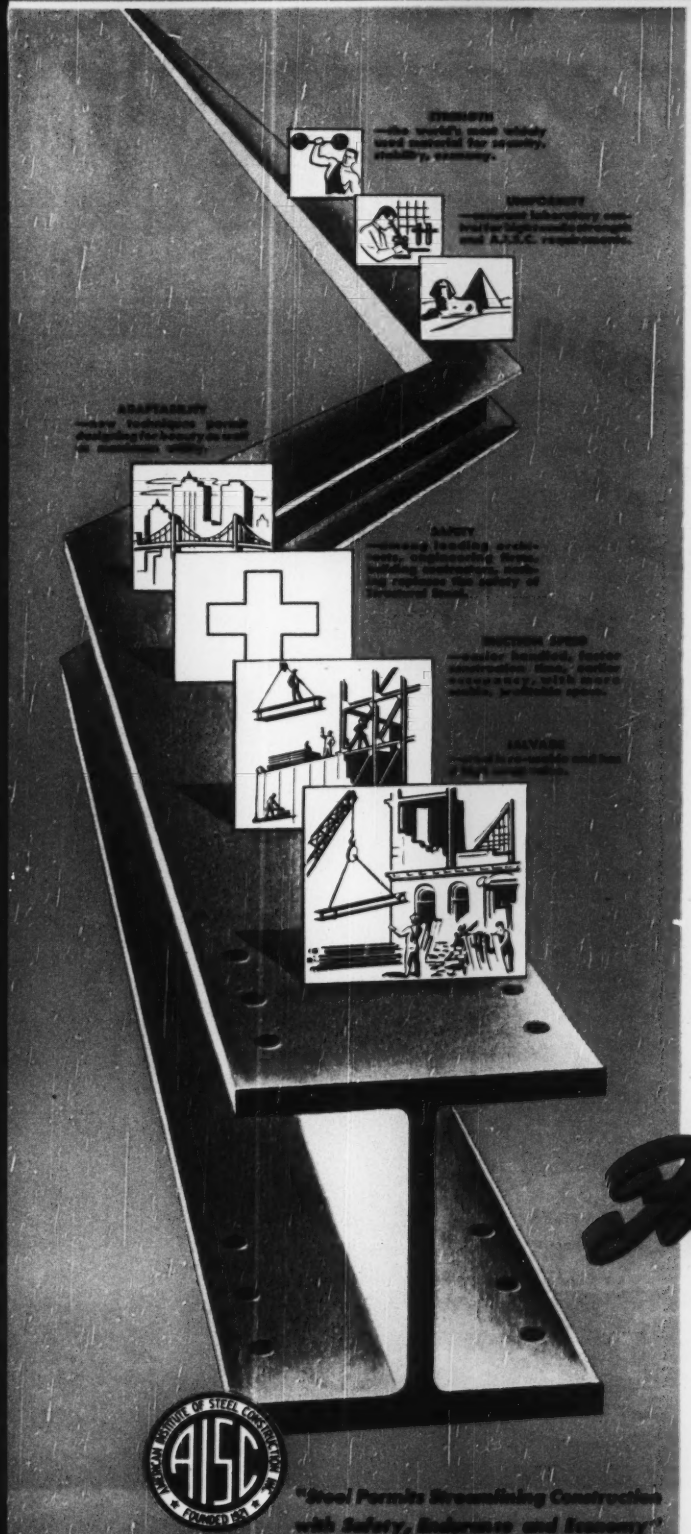
Alberta—Province of Alberta, Parliament Bldgs., Edmonton, grading Hy. from Condor to Rocy Mountain House, to Foothills Constr. Co., 611 7 Ave., Calgary, **$161,434**. Awarded 10/12. CD 12/3/43.

EARTHWORK, WATERWAYS

BIDS ASKED

† **Louisiana**—B. A. 11/9—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, approx. 1,190 lin. ft. pile dikes, Egg Bend, Item D 89.6 R and Choctaw Bayou, Item D 71.65 R, Avoyelles Parish. CIVENG 16-047-51-71.

(Continued on page 81)



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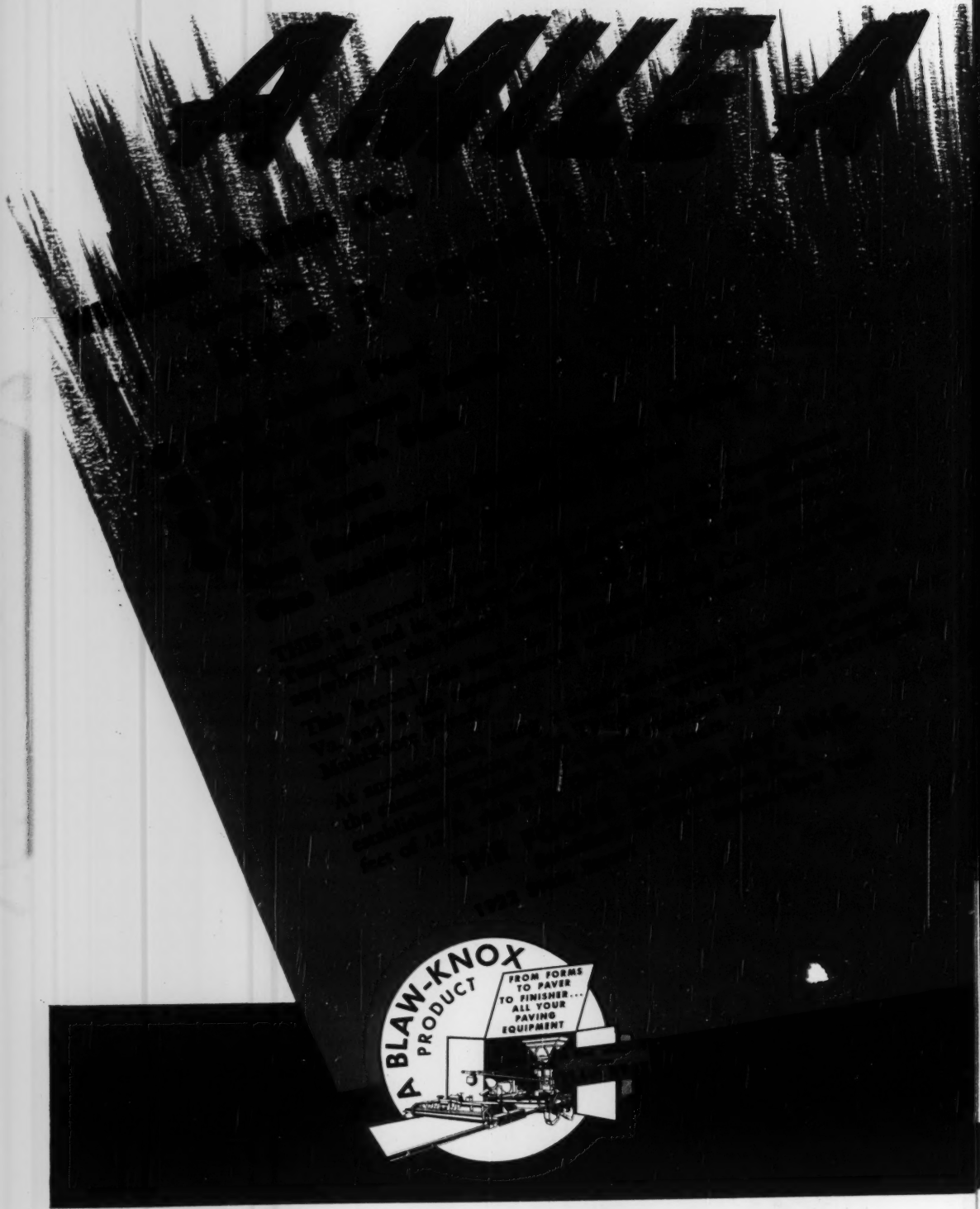
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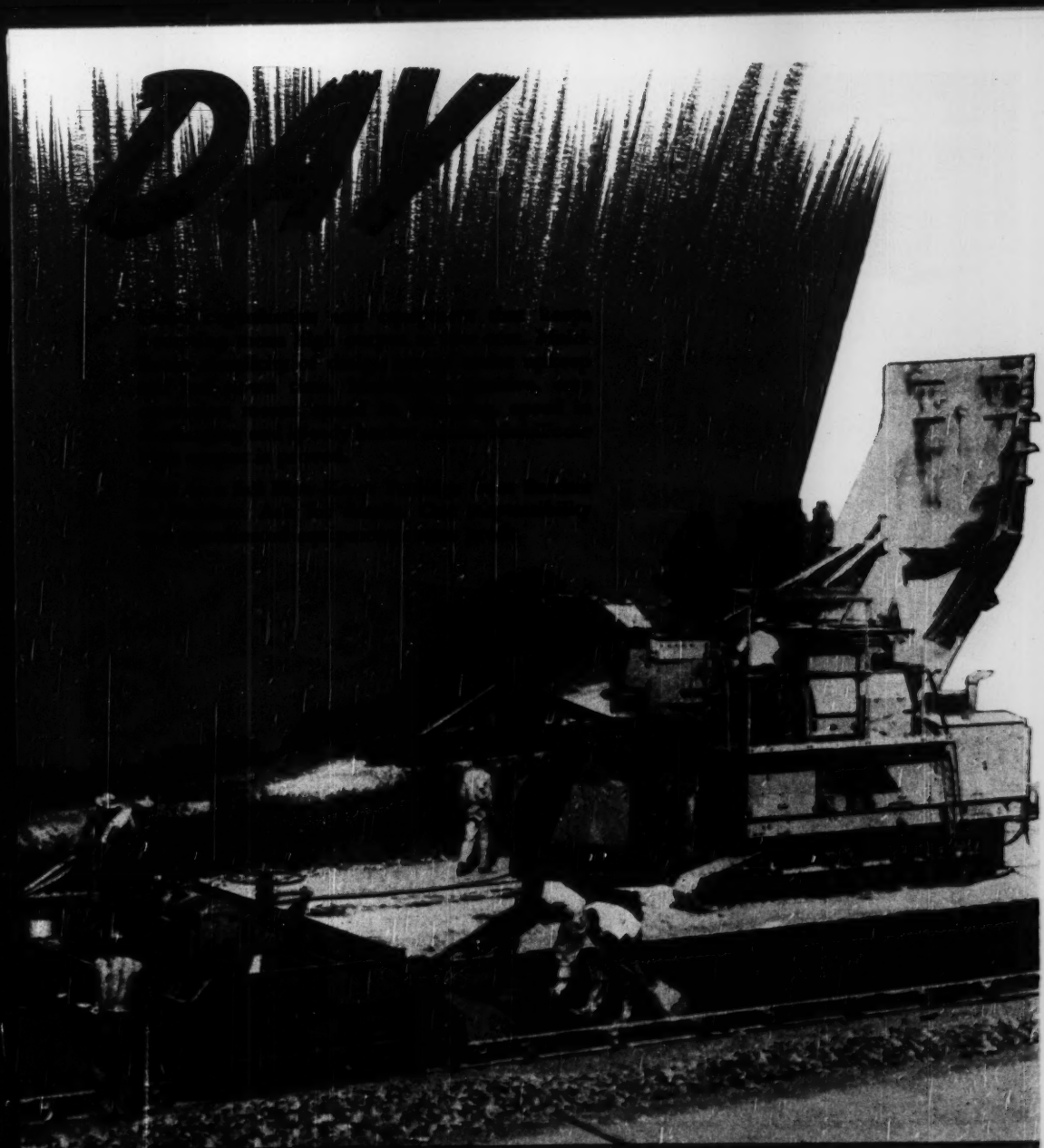
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(Continued from page 76)

† **South Dakota, Nebraska and Iowa**—B. A. 11/10—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., construction, strengthening approx. 25,758 lin. ft. revetment in or immediately adjacent to Missouri River, in Kensler-Lower Sioux City Bends, Union Co. S.D., Dakota Co., Neb. and approx. 7 mi. upstream from Sioux City, Ia., Inv. No. CIVENG 25-066-51-44.

† **New Mexico**—B. A. About 11/14—U. S. Eng., P. O. Box 1538, Albuquerque, emergency flood control work, Rio Grande, Santa Cruz Irrigation Dist. near Espanola, Serial No. CIVENG 29-005-51-6.

† **Arizona—Nevada**—B.A. 11/14—Bureau Reclamation, Dpt. Interior, Bldg. 1-a, Denver Federal Center, Denver, Colo., jet pumps for Units A3, A4 and A9, Hoover Power Plant, Boulder Canyon Proj., Spec. DS-3216. CD 9/12/44.

† **Wyoming—South Dakota**—B.A. 11/14—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars at Moorcroft, Wyo., pipe and accessories, for outlet works, Keyhole Dam, Cheyenne Div., Keyhole Unit, Missouri River Basin Proj., Spec. DS-3218. L. N. McClellan, ch. engr. CD 12/14/49.

LOW BIDDERS

† **Wyoming**—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., earthwork, canal, lining and structures for Schedules (2) Wyoming Canal, Station 2560 plus 00 to 3131 plus 50; Badger lateral, Station 0 plus 00 to Station 59 plus 37; Badger lateral wasteway; and Cottonwood drain—using rectangular drop structure, or Alternate (3) same as (2) except—using trapezodal drop structure; Schedule 4 (Wyoming Canal, Station 3131 plus 50 to 3304 plus 00; laterals W48.59, W49.53, W52.81, W54.61, W57.05, W5930, W60.-11, W60.55 and W61.56; sublaterals; and wasteways W57.05 and W60.11 using concrete in canal lining ar Alternate (5) same as (4) except—using asphaltic concrete in canal lining Riverton Proj., Spec. 3818, from Sharrock & Pursel, Casper, Sch. 2, $388,950; Sch. 3, $373,389; Sch. 4, $414,127; Sch. 5, $397,704. CD 9/19.

N. B., Green Point—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., Oct. 11, breakwater repairs, from Diamond Constr. Co., 60 Carleton St., Fredericton, approx. $59,696. Est. $70,000. CD 10/2.

CONTRACTS AWARDED

† **California**—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., Schedule 2, 2,800 tons bulk pozzolan for constr. Cachuma Dam, Cachuma Proj., Spec. 31272, to Airox Co., 307 W. 8 St., Los Angeles, $39,928. Bids 9/26, awarded 10/13. CD 9/7.

† **Oregon**—U. S. Eng., Pittock Block, Portland, mfg., delivery gates, 2 penstock gates, guides and hoists, 1 penstock stoplog and lifting beam, 1 outlet stoplog and lifting beam for Detroit Dam, North Santiam River, CIVENG 35-026-51-57, to Pacific Coast Eng. Co., P.O. Drawer E, Alameda, Calif., $132,100. Bids 10/12. CD 9/15.

AIRPORTS

BIDS ASKED

Mich., Pellston—AIRPORT—B.A. 11/7—State, Dpt. Aeronautic, L. J. Maitland, dir., Lansing, 1 story, 31x69 ft., brick veneer admin. bldg., 1 story, 7x7 ft. brick veneer pumphouse, fencing, sidewalks, well and turfing, Emmet County Airport, FM 24-1-C 1. Plans deposit $5 no refund.

† **N. C., Cherry Point**—STEAM CONDENSATE RETURN PIPING—B.A. 11/7—At office John J. Albers, Commander CEC USN, Resident Officer-In-Charge of Construction, Marine Corps Air Station, Cherry Point, removing, replacing approx. 1,260 ft. steam condensate return piping ranging from 1½ to 5-in. and furnishing, installing approx. 200 ft. 6 in. steam and 3 in. condensate piping incl. 1 reinf.-con. manhole, etc., Spec. 25683. Plans deposit $10.

† **S. D., Rapid City**—HANGAR—B.A. About 11/9—U. S. Eng., 1709 Jackson St., Omaha, Neb., altering H. B. Hangar at Rapid City Air Force Base, Weaver, Spec. No. ENG 25-066-51-23.

† **South Dakota**—ACCESS RAILROAD—B.A. About 11/10—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., access railroad for Oahe Reservoir Proj. in Stanley Co. near Pierre, Spec. No. CIVENG 25-066-51-36.

† **Alaska, Eielson Air Force Base**—HEATING and POWER PLANT—B.A. 11/15—U. S. Eng. (APO 942, c/o PM, Seattle, Wash.), Anchorage, central heating and steam power plant, Inv. No. 595-507-51-22. Plans deposit $100.

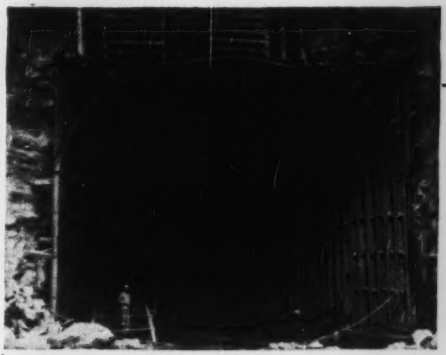
† **Neb., Fort Crook**—BARRACKS—B.A. 11/26—Strategic Air Command, Offutt Field, Fort Crook, barracks for non-commissioned officers. $300,000.

LOW BIDDERS

† **Colo., Denver**—GUNNERY RANGE—U. S. Eng., Bldg. 11, Denver Federal Center, constr. gunnery range, from Newstrom-Davis & Co., 2000 W. 8 Ave., $193,367. CD 10/4.

† **Tex., Randolph Field**—DOCKS—U. S. Govt., Randolph Field Air Base, Randolph Field, Oct. 16, airplane B-29 maintenance docks, Serial No. 31-127-51-13, from Barksdale Constr. Co., 3310 S. Flores St., San Antonio, $57,660.

▲ † **Alaska**—TRANSMITTER and RECEIVER FACILITIES—U. S. Eng., (APO 942, c/o PM, Seattle, Wash.) Anchorage, Oct. 17, construct remote transmitter and receiver facilities, control tower and communications center, Inv. No. 595-507-51-16,



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Elmendorf Air Force Base, from Morrison-Knudsen Co., Inc., 319 Broadway, Boise, Idaho, $1,095,564. Est. $896,551. CD 9/25.

PUBLIC BUILDINGS

BIDS ASKED

N. C., Raleigh—AGRICULTURAL WING—B.A. 11/7—State, Geo. B. Cherry, supt. P. Bldgs., Grounds. Agriculture Bldg., agriculture annex. Plans deposit $50 general contr.; $25 mechanical work. Allen J. Maxwell, Jr., Goldsboro, archt., L. E. Wooten & Co., Box 2984, Raleigh, engr. CD 12/16/49.

Mich., Ann Arbor—CLASSROOM—B.A. 11/8—University of Michigan, Robert P. Briggs, vice pres., 8 story, brick, steel, concrete Angell Hall addn. to conference unit, 4 story classroom bldg., Proj. 15. Plans deposit $100. Smith, Hinchman & Grylls, Inc., 800 Marquette Bldg., Detroit, archt. CD 6/30.

Mich., Marcellus—SCHOOL—B.A. 11/8—Bd. Educ., E. A. Terrill, secy., 2 story, bsmnt., brick, steel high school, Louis C. Kingscott & Assoc., Inc., 511 Monroe St., Kalamazoo, archt.

Miss., State College—ANIMAL HUSBANDRY—B.A. 11/8—State Bldg. Comn., New Capitol Bldg., Jackson, animal husbandry bldg. at Mississippi State College, $400,000. Plans deposit $25. James T. Canzaro, 801 Deposit Guaranty Bank Bldg., Jackson, archt. CD 10/13.

O., Lancaster—POWER PLANT—B.A. 11/8—S. O. Linzell, dir Dpt. P. Wks., 705 Ohio Dpts. Bldg, Columbus, heating and power plant repairs and service units at Boys Industrial School. Beiswenger & Hoch, 1661 W. Market St., Akron, engrs.

O., Toledo—SCHOOL—B.A. 11/8—Wm. E. Hallauer, Bd. Educ., Linwood Ave., Washington School addn., Palmwood Ave. and Wheeler St. Plans deposit $15. Britsch & Munger, Nicholas Bldg., archts.

Wis., Lancaster—HOME FOR AGED—B. A. 11/8—Grand Co., 2 story ground floor L-shaped, 185x105x46 ft., rein.-con., steel, brick home for aged. Plans deposit $25. Durrant & Berquist, 197 Jones St., Dubuque, Ia., archts. and engrs. CD 1/22/47.

B. C., Vancouver—BUS TERMINAL—B. A. 11/8—Acting Secy., Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., bus terminal and examining warehouse, Pacific Hy. Approx. $200,000. Plans deposit $50. G. Brault, c/o owner, archt.

Calif., Concord—SCHOOLS—B.A. 11/9—Mount Diablo Unified School Dist., Grant St., 1 story, 33,500 sq. ft., wood frame, stucco Gregory Gardens School; 1 story, 24,000 sq. ft., wood frame, stucco Village School, Approx. $250,000 each. Plans deposit $25 each. Reynolds & Chamberlain, John Lyon Reid, Confer & Willis, & Anderson & Simonds, 3833 Piedmont Ave., Oakland, archts. CD 12/15/49.

Mich., Michigan Center—SCHOOL—B.A. 11/9—Bd. Educ., Homer A. Cusick, secy., High School Bldg., 2 story, bsmnt., brick, steel school addn. to high school, $250,000. Warren S. Holmes Co., 2200 Olds Bldg., Lansing, archt.

Pa., Blain—SCHOOL—B.A. 11/9—Public School Building Auth., 1400 N. Cameron St., Harrisburg, general constr., heating and ventilating, plumbing, electrical work for Consolidated School for the Blain Union School Dist. $400,000. Plans deposit $25 general, $20, heating and ventilating, $15 each others. James W. Minick Assoc., 1601 N. Front St., Harrisburg, archt. W. W. Behrens, c/o owner, ch. engr. CD 2/27.

Pa., Greenville — SCHOOL — B.A. 11/9 — West Salem Twp. School Dist., RD. 1, Greenville, 2 story, bsmnt., 48x141 ft. brick, steel grade school, West Salem Twp., near here. $300,000. Plans deposit $25. Kling & Frost, 661 Wick Ave., Youngstown, O., archts.

Mass., Wrentham—INFIRMARY—Bids After 11/10—Commonwealth of Mass., Dpt. Mental Health, 15 Ashburton St., girls infirmary, Project M 22, $800,000. M. A. Dyer Co., 8 Beacon St., Boston, archt. CD 8/1.

Calif., Imola—HOSPITAL UNIT—B.A. 11/14—State Div. Architecture, P. Wks. Bldg., Sacramento, 2 story, partial bsmnt., 206,000 sq. ft., rein.-con. receiving and treatment Unit Bldg. at Napa State Hospital, site grading, road paving. Plans deposit $75. Anson Boyd, Sacramento, state archt.

Calif., Oaklnad—SCHOOL—B.A. 11/14—Bd. Educ., 1025 2 St., 27,000 sq. ft. wood frame, Claremont Junior High School addn. $350,000. Plans deposit $25. John B. Anthony, 178 Grand Ave., archt. CD 8/11/48.

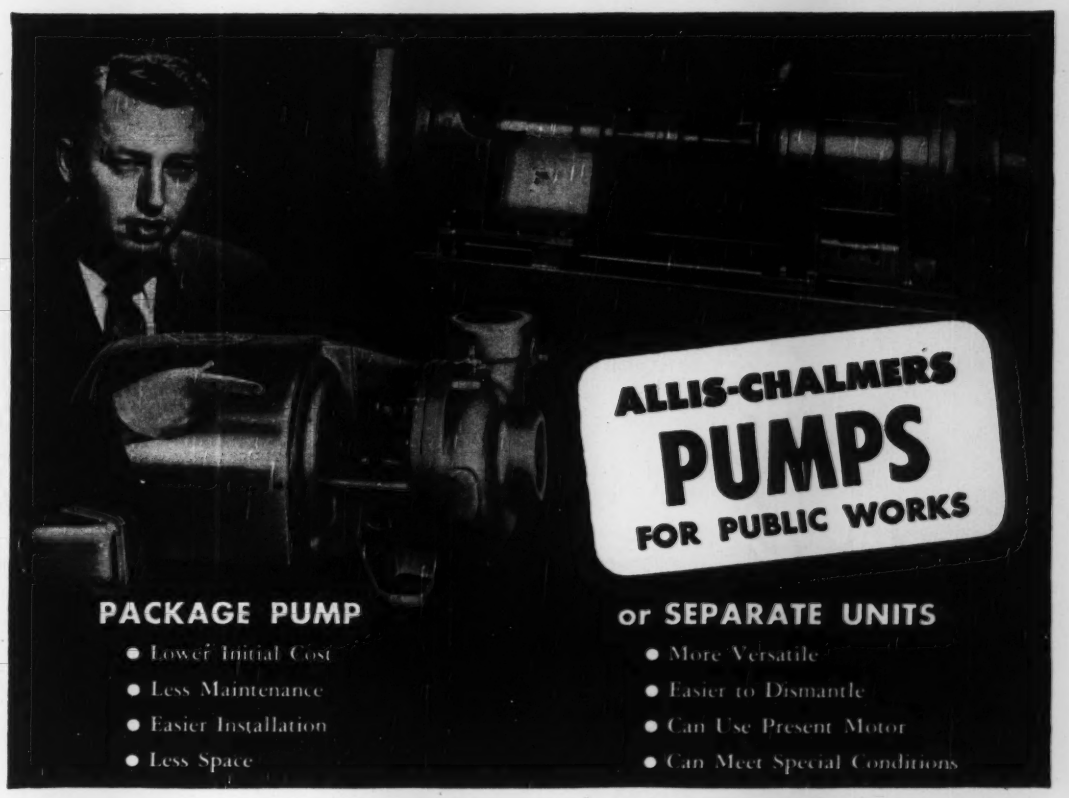
Conn., Middletown—POWER PLANT—B.A. 11/14—State, R. S. Thatcher, comptroller, State Capitol, Hartford, B A 1-76 power plant at Connecticut State Hospital. Plans deposit $25.

▲ **New York**—SCHOOL—B.A. 11/14—Supt. School Buildings, Design & Constr., 49 Flatbush Ave., exten. Brooklyn, Zone 1, general contract, plumbing and draining, heating and ventilating, electrical work and lighting fixtures for P. S. 186, Little Neck Parkway and 72 Ave., Queens Boro. $1,678,500. Plans deposit $15 general constr., $6 each others. CD 1/17.

Tenn., Pulaski—SCHOOL—B.A. About 11/15—Giles Co., Pulaski, school, $400,000. Howard, Hickerson & Jordan, Inc., 304½ Third St. N., Nashville, archt. CD 6/27.

Calif., Los Angeles—COMPENSATION INSURANCE FUND—B.A. 11/21—State Div. Architecture, P. Wks. Bldg., Sacramento, general contract, plumbing, heating and air-conditioning, electrical work, elevators, 3 story bsmnt., 53,800 sq. ft. rein.-con. Com-

(Continued on page 85)



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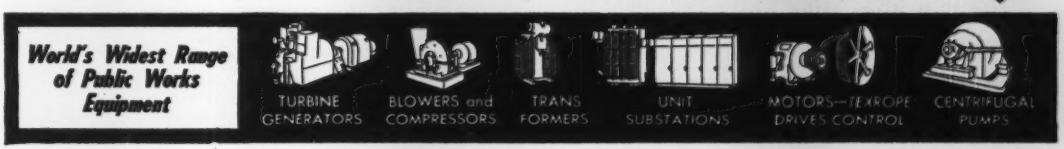

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(Continued from page 82)

pensation Insurance Fund Bldg. Plans deposit $25. Anson Boyd, Sacramento, state archt.

† **Ga., Augusta**—QUARTERS—B.A. 11/28—Veteran Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D. C., constr. 27,000 cu. ft. Duplex Quarters Bldg. 512, for Veteran Admin. hospital, Proj. 10-5120, incl. walks, grading, plumbing, heating, elec. work, outside services, etc.

LOW BIDDERS

Calif., Jackson—HOSPITAL—Amador Co., Court House, Oct. 13, 23-bed, rein.-con., steel hospital, from More & Roberts, 693 Mission St., San Francisco, $408,804. CD 9/19.

Calif., Santa Rosa—JUVENILE HALL, etc.—Sonoma Co., Court House, Oct. 11, 1 story, rein.-con. juvenile hall and detention home, from Francies Constr. Co., 1929 Sonoma Ave., $275,000. CD 3/7/46.

Colo., Lamar—POWER PLANT—City, City Hall, municipal power plant expansion, generators and turbine, from Worthington Pump & Mach. Corp., 4751 Broadway, Denver, $190,000. CD 10/2.

Pa., Muncy—COTTAGE DORMITORIES—General State Auth., 18 and Herr Sts., Harrisburg, Oct. 18, general contract cottage dormitories for inmates at Muncy Industrial Home, from Boyd H. Kline, Bloomsburg, $302,984. Est. $280,000. CD 10/4

▲ **Utah, Salt Lake City**—SCHOOL—Bd. Educ., 440 East 1 South St., rejected bids Sept. 21, general contract Southeast Junior High School. L. B. $1,194,916. Will re-advertise. CD 9/12.

CONTRACTS AWARDED

Mass., Peabody—SCHOOL—City, City Purchasing Agent, City Hall, school, South Peabody, to E. H. Porter Constr. Co., 13 Wallis St., $422,600. Bids 6/9. D 6/19, under LB.

Va., Chesterfield—SCHOOLS—Chesterfield Co., Chesterfield, Midlothian School addns., alterations and Jahnke Road School, to C. E. Nuckols, 1103 E. Main St., Richmond, $432,839. Dixon & Norman, 1103 E. Main St., Richmond, archts.

Wyo., Jackson—GYMNASIUM, etc.—School Dist. 1, Teton Co., gymnasium, 60x180 ft. school, to Eriskell & Wiley, Jackson, approx. $250,000. Tresler & McCall, 507 16 St., Cody, archts. and engrs.

▲ **Puerto Rico**—HOUSING—Municipal Housing Auth. of Puerto Rico, Caserio San Antonio, Avenida Fernandez Juncos, Puerta de Tierra, Puerto Rico, First Phase, 48 buildings and 882 dwelling units of Luis Llorens Torres Proj. to Javier Zequeira, $3,896,000. Bids 8/10. CD 8/25, under LB.

▲ **Puerto Rico**—HOUSING—Municipal Housing Auth. of Puerto Rico, Caserio San Antonio, Avenida Fernandez Juncos, Puerta de Teirra, Second Phase, 42 two and three story buildings, with 744 dwelling units, of the Luis Lloren Torres low cost housing, Loiza St., to Nevares & Morales, San Juan, $3,288,000. CD 8/22.

N. S., Sydney—HOSPITAL—City, H. R. MacPherson, clk., general contract 6 story, 75x185 ft., T-shaped, rein.-con. city hospital addn., to M. R. Chappell, 60 Brookland St., Approx. $984,289; plumbing and heating, to H. R. Jones Co. Ltd., 110 Prince St., Approx. $264,801. Bids 8/28. CD 8/8.

COMMERCIAL BUILDINGS

LOW BIDDERS

Tex., Dalias—CHURCH—First Baptist Church, 606 N. Ervay St., Sept. 1, 3 story bsmnt. (concrete pier and beam fdn. for 10 story) brick, stone church, from Inge-Haymon Constr. Co., 2326 N. Beckley St., $500,000. CD 8/15.

CONTRACTS AWARDED

▲ **Colo., Denver**—SHOPPING CENTER—Richard L. Mark, Railway Exchange Bldg., L-shaped 300x600 ft., brick Merchants Park Shopping Center, to Abe Perlmutter Constr. Co., 401 Vallejo St., $1,200,000. Awarded 10/2. Stanley E. Morse, 835 Delaware St., Denver, archt. and engr.

Ill., Chicago—RESIDENCES—Walter Schuhknecht, 3550 W. Fullerton St., Zone 47, 39 residences, to M. Larsen & Co., 6818 N. Hurlbut St., Zone 26, $275,000. Awarded 10/12. B. J. Bruns, 473 N. Hermitage St., Zone 12, archt.

Ill., Elmhurst—HIGH SCHOOL—Immaculate Conception School 269 S. York St., 3 story, bsmnt., 65x145 ft., steel, concrete, brick, stone high school, to Frank Vertovic, 185 Larch St., $300,000. Bids 9/6, awarded 10/11.

Tex., Fort Worth—DWELLINGS—Warren W. McKeever, 2854½ W. Berry St., 12 addnl. dwellings. Owner builds. Approx. $360,000. CD 10/16.

Tex., Houston—SHOPPING CENTER—Braeswood Building & Development Co., c/o Dixon & Greenwood, archts., 2265 Bellaire Bldg., superstructure and fdn. for 1 and 2 story, 100x750 ft. brick, hollow tile shopping center, to Linbeck Constr. Co., P. O. Box 13007, $803,000. Est. $475,000. CD 9/29.

Tex., Houston—HOUSING—Suburban Homes Realty Co., 9102 Humble Rd., 90 addnl. housing units, E. Houston Rd., own forces, $265,000. CD 7/31.

Alta., Edmonton—APARTMENT—Strathearn Heights Ltd. & Alvin Enterprises, Edmonton, 52 apartments in Strathearn Area, to Bennett & White of Edmonton Ltd., 11239 83 St. Approx. $3,500,000.

Ont., Toronto—COMMUNITY CENTER—Jewish Community Center, 760 Spadina Ave., 2 story, bsmnt., 174x179 ft., rein.-con., brick, steel community cen-

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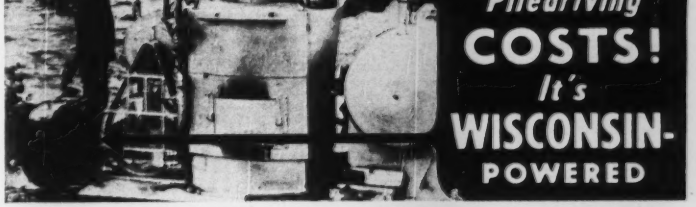

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INDUSTRIAL BUILDINGS

BIDS ASKED

Tex., Houston—SERVICE STATION—Bids Asked—Gulf Oil Corp., Gulf Bldg., service station. $100,000. CD 10/16.

Ont., St. Thomas—WAREHOUSE—Bids Asked—B. Venning, mgr. National Grocers' Co. Ltd., 32 St. Catherine St., 1 story, 70x100 ft., steel warehouse addn. $125,000.

SOON LETS CONTRACT

N. Y., Niskayuna—FACILITIES—General Electric Realty Corp., Atomic Power Laboratory, Niskayuna, soon lets contract addnl. facilities.

LOW BIDDERS

Tex., Dallas—STORAGE WAREHOUSE—The Ruberoid Co., Harrys Rd. and Singleton Blvd., Oct. 16, machinery and dry felt storage warehouse, from Peterson Constr. Co. Coit Rd. and Southwestern St. $73,300. CD 10/12.

Tex., Fort Worth—CHEMICAL PLANT—International Miners & Chemical Corp., 20 N. Wacker Dr., Chicago, Ill., cancelled bids, chemical fertilizer plant. $400,000. CD 9/5.

CONTRACTS AWARDED

Ill., Chicago—FACTORY—Bryant Electric Co., 1718 W. Fullerton St., Zone 14, 20,000 sq. ft., steel, brick, concrete factory, to Northern Builders, 4002 W. Addison St., Zone 41, $150,000. Awarded 10/12. Frank S. Musser, 1712 107 St., Zone 43, engr.

Tex., Freeport—SHOP—Dow Chemical Co., Freeport, 1 story, 100x180 ft. structural steel shop, concrete slab fdn., etc., to Harold Van Buskirk Co., Inc., 3105 Dixie Dr., Houston, $200,000. Johnson & Kelley, Scanlan Bldg., Houston, engrs. and archts. CD 6/15.

Tex., Pasadena—INDUSTRIAL CENTER—Southmayd Building Co., 2300 Pease St., Houston, industrial center units, off Red Bluff Rd., own forces. $450,000. CD 6/5 under Commercial Bldgs.

B. C., Vancouver—WAREHOUSE, etc.—General Motors Products of Canada, Ltd., 1014 Homer St., 40,000 sq. ft., rein.-con. warehouse and office, to Dominion Constr. Co., Ltd., 150 W. 1 Ave., $400,000. Awarded 10/1.

Ont., Guelph—PLANT—Guelph Daily Mercury, Guelph, plant exten. and renovation existing bldg., Macdonell and Norfolk Sts., to D. Pagani, 108 Metcalfe St. N. Approx. $150,000. Bids 9/18. CD 9/12.

Ont., Sudbury—GARAGE, etc.—Meredith-Connelly Motors, 214 Bloor St., 2 story, 67x210 ft., concrete, steel, brick garage and showroom, to Vuori Constr. Ltd., 6 Sutherland St. Approx. $225,000. Bids 9/2. CD 8/25.

Ont., Toronto—PLANT—Ault & Wilborg of Canada Ltd., 82 Peter St., ink-making plant addn., to James W. Hewitt & Sons, 56 Roncesvalles Ave. Approx. $100,000. Murray Brown & Elton, Confederation Life Bldg., archts.

UNCLASSIFIED

BIDS ASKED

† **Wyoming**—STRUCTURAL STEEL—B.A. 11/6—Bureau Reclamation Dpt. Interior, P. O. Box 280, Reclamation Center, Casper, furnishing, del. structural steel for Pine Bluffs Rural Sub-station Addns., Transmission Div., Missouri River Basin Proj., Spec. No. 703S-159., adv. ENR 11/2.

† **Colorado**—CONTROL SYSTEM, etc.—B. A. 11/7—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Walt Siding, Colo., control system, conduit sections, portal sleeve, anchor bolts and butterfly valve base for Carter Lake Pressure Tunnel, Estes Park-Foothills power aqueduct, Colorado-Big Thompson Proj., Spec. DS-3215. L. N. McClellan, ch. engr.

Illinois—RAILROAD—B.A. 11/8—New York Central System, E. A. Dougherty, ch. engr. 425 LaSalle St. Station Chicago, embankment, sub-ballast and culverts for double-track railroad roadbed to carry two Michigan Central R. R. main tracks on temporary alignment to west of Little Calumet River through the new overpass for Stoney Island Ave. extended along common line between Colton and Calumet City.

† **Va., Portsmouth**—POWER HOUSE CHIMNEY—B.A. 11/8—Pub. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, repairing power house chimney at U. S. Naval Hospital, Spec. 25267. Plans deposit $10.

Que., St. Godefroi—WHARF—B.A. 11/8—Acting Secy., Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., wharf replacement. Approx. $80,000. Plans deposit $20. R. Blaise, c./o owner, engr.

Ont., Toronto—STEEL BARS—B.A. 11/14—Rapid Transit Div., 14 Front St. E., supplying approx. 918 tons reinforcing steel bars for Contr. S-6 for Yonge St. Subway, approx. $73,500. CD 1/9/46.

California—TRAFFIC SIGNAL SYSTEM, etc.—B.A. 11/15—State Div. Hys., P. Wks. Bldg., Sacramento, traffic signal sys. and hy. lighting and channelization on Bayshore Hy. at 4 St. Exten. G. T. McCoy, Sacramento, state hy. engr.

† **Montana**—BULKHEAD GATES, etc.—B.A. 11/21—Bureau Reclamation, Bldg. 1A, Denver Federal Center, Denver, Colo., furnishing, del f.o.b. cars shipping point or f.o.b. cars Louisville, nine 9 ft. 4 in. by 10 ft. 8 in. bulkhead gates, not incl. rubber seals, complete with one set bulkhead gate seats and guides, one bulkhead gate lifting beam for Canyon Ferry Power Plant, Helena Great Falls Div., Canyon Ferry Unit, Missouri River Basin Proj., Spec. DS 3223. L. N. McClellan, ch. engr.

LOW BIDDERS

†**Calif., Oakland**—PIER—U. S. Eng., 180 New Montgomery St., San Francisco, rejected bids, rehabilitation Pier 4, at Oakland Army Base, Spec. 04-203-51-14. L.B. $83,068. CD 9/14 under LB.

Man., Lockport—LOCK, etc.—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., Lock and Dam at St. Andrews Lock imprvs., from R. A. Blyth Constr. Co., 7 St. Andrews Gardens, Toronto. Approx. $107,235.

CONTRACTS AWARDED

Ind., Bluffton—DRIVE-IN THEATER—Tomkinson Brothers, c/o Clifton Tomkinson, 4401 Anthony Wayne Dr., Fort Wayne, 350-car drive-in theater, on 20-acre tract at junction State Rds. 1 and 116 about 1 mi. north of city limits. Owner builds. $50,000.

New Mexico—RURAL DISTRIBUTION LINES—Jemez Mountain Electric Co-operative, Inc., San Ysidro, 18 mi. 69 kv rural distr. lines, Rio Arriba Co., to Hallett Const. Co., Crosby, Minn. $319,354. Awarded 10/4. Price & Hawk, 1641 Broadway, Lubbock, Tex., engrs. and archts.

Texas—GAS MAIN—United Gas Pipe Line Co., United Gas Bldg., 20 mi. gas main between Missouri City and Houston Ship Channal in Houston, to Brown & Root, Inc., Box 3, Houston. Approx. $136,000. CD 2/27/48.

Tex., Dallas—GAS LINES—George A. Jackson & Assoc., 1806 Main St., natural gas lines, portion 425 acre tract by Garland and Jupiter Rds. and Easton St., own forces. Approx. $50,000. CD 10/6.

PROPOSED PROJECTS

WATER SUPPLY

Calif., Walnut Creek—City, City Hall, water sys., incl. at terminal reservoir, with 5 m. g. capacity, constr. dam, pipe line and pre-stressed tank. $440,000. Roy E. Ramseier, 2813 Parker St., Berkeley, consult. engr.

▲ **La., Metairie**—East Jefferson Waterworks Dist. 1, voted bonds, WW imprvs. $5,000,000.

▲ **Miss., Clarksdale**—City, voted bonds, water and light plant addn. $1,100,000. CD 9/22.

Tenn., Loretto—Town, WW imprvs. $117,000. C. N. Harrub Eng. Co., Presbyterian Bldg., Nashville, consult. engr.

▲ **Tex., Austin**—City, bond election Nov. 6, WW (supply), $1,000,000; water sys. rehabilitation, lines and service extens., plant unit, $1,983,000. Wm. Parker, city planner. CD 5/24/49.

Tex., Houston—Harris County Fresh Water Dist. 23, Court House, defeated bonds, water sys. $150,000. CD 10/16.

Tex., San Benito—City, WW sys. rehabilitation, $55,000; WW supply and new line exten., $150,000. Sigler, Clark & Winston, Box 428, Weslaco, consult. engrs. CD 6/8.

Tex., Nacogdoches—City, voted bonds, 3 elevated steel storage tanks and towers, $275,000; pump station, distr. mains, $200,000. CD 9/27.

▲ **Va., Norfolk**—City, WW imprvs. $6,500,000. Whitman, Requardt & Assoc., 1304 St. Paul St., Baltimore, Md., consult. engrs.

▲ **Wash., Seattle**—City, County-City Bldg., Zone 4, 15 mi. pipe line to Bow Lake, $2,250,000; Victory Way pipe line on N. 145 St., $300,000; mains from Beacon Ave. transmission line or Beacon Hill reservoir to Rainier Beach, $100,000; pipe line on W. 80 St., $200,000; 1 m.g. elevated tank, N. 195 St. and Fremont Ave., $200,000. R. W. Morse, water supt. CD 12/30/43.

▲ **Sask., Regina**—Municipality, construct 37 mi. 36 in. water supply main. Bids during winter months. Interested contractors will be shown over the route this fall and given other preliminary information on application. A. Shattuck, project eng., Buffalo Pound Lake project. CD 10/11.

SEWERS, WASTE DISPOSAL

Ill., Chicago—City, City Hall, Zone 2, sewers in W. 50 and W. 53 Sts. between S. Morgan and S. Racine in S. Aberdeen St. between 50 and 51 Sts. $800,000.

Ill., Shelbyville—City, revised plans and bond election soon, sewerage sys. $420,000. Warren & Van Praag, Decatur, engrs.

Minn., Proir Lake—Village, A. H. Speiker, clk., sanitary sewerage sys., sewage treatment plant. $140,000. Banister Eng. Co., 1549 University Ave., St. Paul, consult. engr.

Miss., Clarksdale—City, voted bonds, sanitary and storm sewer imprvs. $500,000. CD 9/22.

O., Berea—City, $200,000 bond election Nov. 7, sanitary intercepting sewers and imprv. sewerage sys.

Ore., Cottage Grove—City, City Hall, $400,000 bond election Nov. 7, sewerage sys. L. W. Coiner, city engr.

Ore., Philomath—City, City Hall, voted $150,000 bonds sewerage sys., disposal plant. Clifford Gee, city engr.

Tenn., Fountain City—Fountain City Utility Dist., c/o Sam B. Godsey, Fountain City, bond election Nov. 7, sanitary sewerage sys. $150,000. CD 3/5/45.

Tex., Houston—Harris County Fresh Water Dist. 23, Court House, defeated bonds, sanitary sewers, $60,000; storm sewers, $75,000. CD 10/16.

Tex., Nacogdoches—City, voted bonds, sewage treatment plant enlargement, $300,000; existing sanitary sewer mains enlargement and new lines, $200,000. CD 9/27.

▲ **Tex., Port Arthur**—City, bond election Dec. 5, storm sewers, $500,000; sanitary sewers, $500,000; drainage, $500,000. Charles P. Smith, Orange, and George Schaumberg, American Natl. Bank Bldg., Beaumont, engrs. CD 4/4.

Tex., San Benito—City, sanitary sewage disposal plant, $125,000; sanitary sewerage sys. rehabilitation and collecting line extens., $125,000. Sigler, Clark & Winston, Box 428, Weslaco, consult. engrs. CD 6/8.

Tex., Sour Lake—City, voted bonds, storm sewers, $50,000; sanitary sewers, $60,000. Garrett Eng. Co., 5008 Almeda Rd., Houston, consult. engr.

BRIDGES

Neb., Grand Island—Union Pacific R.R., W. C. Perkins, ch. engr., 1406 Dodge St., Omaha, viaduct at Sycamore St. over railroad tracks. Approx. $600,000.

▲ **Tenn., Memphis**—City, City Hall, and State Hy. Dpt., Nashville, railroad overpass in vicinity of East Parkway and Central St. $1,000,000. Frank A. Busse Eng. Co., Shrine Bldg., consult. engr.

STREETS AND ROADS

Miss., Clarksdale—City, voted bonds street imprvs. $500,000. CD 9/22.

Neb., Omaha—City, City Hall, 18 and Farnam Sts., and State Dpt. Roads & Irrigation, Lincoln, changing route and paving Railroad Ave. $490,000. F. H. Klietsch, state engr. E. W. Woodbridge, city engr. CD 5/17/48.

▲ **Oklahoma**—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,

Alfalfa Co.—grading, drainage, surf. 4 mi. State Hy. 11, at Cherokee, $115,000.

grading, drainage, minor structures, surf. 1.8 mi. State Hy. 8B, at Cleo Springs, $65,000.

grading, drainage minor structures, surf. 1 mi. State Hy. 11, at Cleo Springs, $20,000.

grading, drainage, minor structures, surf. 11 mi. State Hy. 11 at Cherokee, $350,000.

grading, drainage, minor structures, surf. 13.5 mi. State Hy. 8 at Cherokee, $275,000.

grading, drainage, surf. 7 mi. State Hy. 8 at Carmen, $175,000.

Atoka Co.—grading, drainage, surf. 8.4 mi. U. S. Hy 69, at Chockie $460,000.

Beaver Co.—grading, drainage, surf. 17 mi. State Hy. 3 at Beaver, $460,000.

Blaine Co.—grading, drainage, minor structures, surf. 7.5 mi. State Hy. 8, at Okeene, $140,000.

grading, drainage, minor structures, surf. 3.5 mi. State Hy. 8, at Geary, $65,000.

grading, drainage, minor structures, surf. 8 mi. State Hy. 8, at Greenfield, $163,000.

grading, drainage, minor structures, surf. 9 mi. State Hy. 58, at Canton, $255,000.

Bryan Co.—grading, drainage, surf. 7 mi. State Hy. 299 at Achilee, $365,000.

grading, drainage, surf. 5.5 mi. State Hy. 58, at Kenefic, $165,000.

grading, drainage, minor structures, surf. 6.5 mi. State Hy. 199, Kingston, $325,000.

Caddo Co.—grading, drainage, surf. 17.6 mi. State Hy. 48, at Carnegie, $375,000.

grading, drainage, minor structures, surf. 6 mi. State Hy. 58 at Lookeba, $120,000.

Canadian Co.—grading, drainage surf. 2.5 mi. U. S. Hy. 81, at Union City, $250,000.

grading, drainage, minor structures, surf. 2 mi. U. S. Hy. 81 at El Reno, $350,000.

Carter Co.—grading, drainage, surf. 5 mi. State Hy. 53, at Ringling, $150,000.

grading, drainage, surf. 3.5 mi. U. S. Hy. 78, at Healdton, $225,000.

Cherokee Co.—grading, drainage, surf. 6 I. State Hy. 10 at Cookson, $440,000.

Choctaw Co.—grading, drainage, surf. 4.3 mi. U. S. Hy. 271, Hugo, $250,000.

Cimarron Co.—grading, drainage, minor structures, surf. 8 mi. State Hy. 33B, at Keyes, $160,000.

grading, drainage surf. 2.5 mi. U. S. Hy. 287, at Boise City, $400,000.

grading, drainage, surf. 8 mi. U. S. Hy. 64, at Boise City, $275,000.

Cleveland Co.—grading, drainage, minor structures, surf. 10.2 mi. U. S. Hy. 77, at Norman, $1,450,000.

grading, drainage, minor structures, surf. 7 mi. U. S. Hy. 77H, Norman Co., $350,000.

grading, drainage, minor structures, surf. 4.2 mi. State Hy. 39 at Tecumseh, $90,000.

grading, drainage, minor structures, surf. 4 mi. U. S. Hy. 77 at Norman, $365,000.

Comanche Co.—grading, drainage, minor structures, surf. 19 mi. State Hy. 65, at Velma, $722,000.

Cotton Co.—grading, drainage, minor structures, surf. 8 mi. State Hy. 65, at Randlett, $240,000.

grading, drainage, surf. 7 mi. U. S. Hy. 70, at Temple, $155,000.

(Continued on page 90)

I said to the l

"Let me tell the world about that

LINK-BELT SPEEDER HC-90

I watched in Montana."

"Go ahead," he said.

On June 30, 1949, Anderson Construction Company of Great Falls signed the largest single contract ever let by the Montana Highway Commission. This was to construct a bridge across the Missouri River and railroad tracks south of Great Falls.

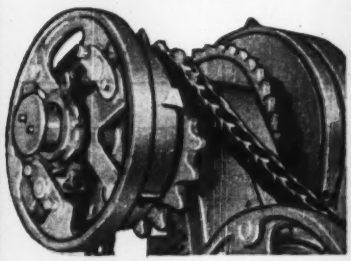
First equipment on the job was their Link-Belt Speeder HC-90 Truck Mounted Shovel-Crane . . . and it remains the busiest equipment on the job. It's used for pouring concrete, driving piles, excavating from coffer dams with a clamshell, and setting structural steel. She works with style on all of these jobs.

Woody Sherman, an operator for 15 years, told me: "The HC-90 is superior to anything I've ever operated in the past . . . And that covers a lot of territory."

Superintendent Bob Millinsifer said: "The HC-90 is giving an outstanding performance on clamming, form handling, steel erection, and pouring concrete. I'm more than satisfied with it."

I'll tell the world: the **HC-90** satisfies.

There's Speed With Safety In The Independent Rapid Boom Hoist



The Independent Rapid Boom Hoist is positively geared to the engine, both in raising and lowering the boom. Therefore, a wide range of controls is obtainable by throttling the engine. This hoist assures safety for accurately spotting the load, where perfect control is required when constantly raising and lowering the boom. The reversing main hoist drum, available for crane work, permits the operator to pay out cable easily to return the hook quickly for the next lift.

12,179

LINK-BELT SPEEDER

LINK-BELT SPEEDER CORPORATION, CEDAR RAPIDS, IOWA

Builders of the Most Complete Line of
SHOVELS-CRANES-DRAGLINES

DRAVO HEATERS..

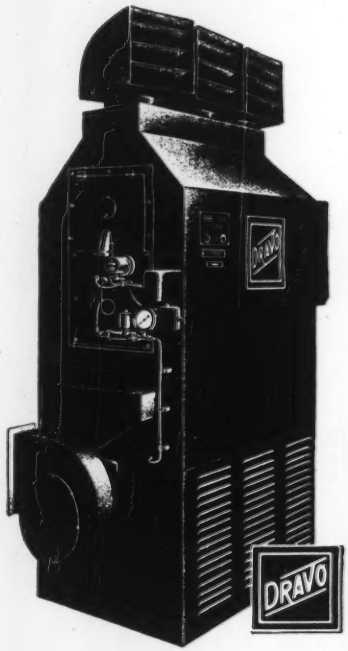
AS WELL AS MONEY....FUEL..

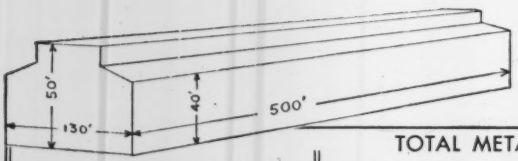
Heating system steel needs *can* be slashed from 50% to 70% for the representative open-space industrial structure shown below . . . by using the direct-fired warm air heating method with Dravo "Counterflo" Heaters! This conservation, of vital importance today, adds another to the long list of economies in money, fuel and labor effected by this heating method.

The chart below gives the detailed comparative story. Every system is equivalent in Btu output. Steel requirements for the 13 methods have been carefully and conservatively calculated.

It will be noted that Dravo Heaters not only take LESS steel in each fuel classification . . . but that the HIGHEST steel requirement in a Dravo installation is almost 50% less than the LOWEST steel requirement in any other system. Of special significance is the contrast in *pipe* required. Jobs now held up by slow pipe deliveries can MOVE . . . if Dravo Heaters are used!

Any time that YOUR jobs are delayed or deferred because of steel or pipe shortages, why not find out how Dravo "Counterflo" Heaters are expediting things for other users? And remember — steel savings are just *one* of the reasons that more and more Dravo "Counterflo" Heaters are heating increasing numbers and types of structures. You'll find many other good reasons listed at right, that will appeal to you.





Each heating system compared below was sized to make up a calculated 12,000,000 Btu heat loss in this representative industrial building.

TOTAL METAL REQUIREMENTS FOR VARIOUS HEATING SYSTEMS

COMPONENT	GAS FIRED					OIL	
	DRAVO WARM AIR	HIGH PRESSURE CONVENTIONAL WATER TUBE BOILER	HIGH PRESSURE PACKAGED STEAM GENERATOR	LOW PRESSURE CONVENTIONAL WATER TUBE BOILER	LOW PRESSURE PACKAGED STEAM GENERATOR	DRAVO WARM AIR	HIGH PRESSURE CONVENTIONAL WATER TUBE BOILER
BASIC HEAT GENERATORS	26,400	38,000	62,000	38,000	62,000	26,400	38,000
PIPING—Oil—Steam Boiler Room—Gas	9,096	15,490	15,490	35,308	35,308	4,352	15,790
TANKS—Oil—Blow-off Condensate		3,500	1,500	1,500	1,500	13,000	16,500
UNIT HEATERS including Traps & Starters		21,240	21,240	21,240	21,240		21,240
STACKS & BREECHING	1,200	4,000	400	4,000	400	1,200	4,000
PUMPS—Fuel Oil Auxiliary Oil—Boiler Feed		1,000	1,000	1,000	1,000	400	1,400
STOKERS & FANS— including Dust Collectors Fuel Oil Preheaters							2,000
STRUCTURAL STEEL Boiler House Foundation Reinforcing		7,000	2,000	7,000			7,000
TONS of STEEL REQUIRED	DRAVO **18**	**45**	**52**	**54**	**61**	DRAVO **23**	**53**

..CONSERVE STEEL

.AND MAN HOURS

DISTRIBUTION PIPING AND DIFFUSERS COMPLETELY ELIMINATED

LEAST STEEL PER 1,000,000 BTU OUTPUT

NO VALVES, TRAPS OR FITTINGS

STAINLESS STEEL CHAMBER ELIMINATES REPLACEMENT

DRAVO CORPORATION

HEATING DEPT., DRAVO BUILDING, PITTSBURGH 22, PA.
Sales Representatives in Principal Cities.
Mfd. and Sold in Canada by Marine Industries, Ltd., Sorel, Quebec.

WITH IDENTICAL 12,000,000 Btu LOAD

← FIRED				COAL FIRED →	
HIGH PRESSURE PACKAGED STEAM GENERATOR	LOW PRESSURE CONVENTIONAL WATER TUBE BOILER	LOW PRESSURE PACKAGED STEAM GENERATOR	DRAVO WARM AIR	HIGH PRESSURE CONVENTIONAL WATER TUBE BOILER	LOW PRESSURE CONVENTIONAL WATER TUBE BOILER
62,000	38,000	62,000	27,450	38,000	38,000
15,790	35,608	35,608		14,990	34,808
14,500	14,500	14,500		3,500	1,500
21,240	21,240	21,240		21,240	21,240
400	4,000	400	1,200	4,000	4,000
1,000	1,400	1,000		1,000	1,000
	2,000		23,850	15,000	15,000
2,000	7,000			7,000	7,000
58	**62**	**67**	DRAVO **26**	**52**	**61**

DRAVO HEATERS HAVE EARNED HIGHEST ACCEPTANCE BECAUSE THEY

- *use less steel*
- *eliminate distribution piping*
- *have lower initial cost*
- *are very efficient in fuel consumption*
- *concentrate comfort heat at the working level*
- *reduce roof heat losses*
- *burn gas or oil*
- *are available in coal burning models*
- *save man hours through automatic operation*
- *require no attendant and negligible maintenance*
- *produce heat instantly and ONLY when needed*
- *have stainless steel chambers for longer life*
- *prevent rust and stain conditions in metal storage*
- *bear UL label and AGA approval*
- *require only stack, fuel and power line*
- *are portable and readily moved*
- *provide year 'round ventilation*
- *are ideal for process drying*
- *avoid freeze up worries, leaky traps, valves, etc.*
- *are shipped complete and flame tested*
- *can be installed on floor, wall or roof*
- *can be mounted upside down or horizontally*
- *eliminate ductwork with 150 ft. air throw*

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Closets—Drawers—etc.

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Phone: Essex 2233

(Continued from page 86)

Creek Co.—grading, drainage, minor structures, surf. 4.5 mi. U. S. Hy. 66, at Sapulpa, $750,000.

Ellis Co.—grading, drainage, surf. 14 mi. U. S. Hy. 283, at Arnett, $340,000.

Garfield Co.—grading, drainage, minor structures, surf. 4 mi. U. S. Hy. 81, at Cherokee, $500,000.

Garvin Co.—grading, drainage, minor structures, surf. 9.7 mi. State Hy. 29, at Elmore City, $900,000.

grading, drainage, minor structures, surf. 12.2 mi. State Hy. 74 at Maysville, $355,000.

grading, drainage, minor structures, surf. 13 mi. State Hy. 74, at Elmore City, $300,000.

grading, drainage, minor structures, surf. 2 mi. State Hy. 76, at Lindsay, $300,000.

Grady Co.—grading, drainage, minor structures, surf. 7 mi. U. S. Hy. 81, at Rush Springs, $350,000.

grading, drainage, minor structures, surf. 9.2 mi. State Hy. 41, $230,000.

grading, drainage, minor structures, surf. 1 mi. State Hy. 41, at Verden, $275,000.

grading, drainage, minor structures, surf. 2.1 mi. State Hy. 19, at Pocasset, $335,000.

grading, drainage, minor structures, surf. 7 mi. State Hy. 9, at Ninnekah, $84,000.

Grant Co.—grading, drainage, minor structures, surf. 12.8 mi. State Hy. 11, at Cherokee, $375,000.

Haskell Co.—grading, drainage, surf. 10.5 mi. State Hy. 2, at Kinta, $432,000.

Jefferson Co.—grading, drainage, minor structures, surf. 5 mi. State Hy. 89, at Ryan $358,000.

grading, drainage, minor structures, surf. 11 mi. State Hy. 32, at Hastings, $220,000.

grading, drainage, minor structures, surf. 7 mi. State Hy. 32, at Addington, $266,000.

Kingfisher Co.—grading, drainage, minor structures, surf. 1 mi. U. S. Hy. 81, at Kingfisher, $209,000.

grading, drainage, minor structures, surf. 4 mi. State Hy. at Loyal, $84,000.

Latimer Co.—grading, drainage, surf. 5 mi. U. S. Hy. 270 at Wilburton, $425,000.

Leflore Co.—grading, drainage, surf. 2 mi. U. S. Hy. 271 at Poteau, $85,000.

grading, drainage, surf. 6 mi. U. S. Hy. 271 at Summerfield, $370,000.

grading, drainage, surf. 8 mi. U. S. Hy. 271 at Talihina, $320,000.

Lincoln Co.—grading, drainage, minor structures, surf. 15.7 mi. U. S. Hy. 66 at Chandler, $750,000.

Logan Co.—grading, drainage, minor structures, surf. 10 mi. State Hy. 74 at Crescent, $360,000.

grading, drainage, minor structures, surf. 7 mi. State Hy. 51 at Cashion, $402,000.

grading, drainage, minor structures, surf. 13 mi. State Hy. 51 at Orlando, $422,000.

grading, drainage, minor structures, surf. 3 mi. State Hy. 51 at Orlando, $75,000.

grading, drainage, minor structures, surf. 9.6 mi. State Hy. 51 at Orlando, $600,000.

Love Co.—grading, drainage, surf. 12.5 mi. State Hy. 32 at Marietta, $350,000.

Major Co.—grading, drainage, minor structures, surf. 5 mi. U. S. Hy. 283, at Buffalo, $350,000.

grading, drainage, minor structures, surf. 7 mi. State Hy. 8 at Fairview, $350,000.

grading, drainage, minor structures, surf. 7.5 mi. U. S. Hy. 281 at Cherokee, $200,000.

grading, drainage, surf. 1 mi. U. S. Hy. 60 at Ringwood, $220,000.

grading, drainage, surf. 9 mi. State Hy. 58 at Cleo Springs, $225,000.

grading, drainage, surf. 2 mi. State Hy. 8 at Fairview, $75,000.

Marshall Co.—grading, drainage, surf. 4.7 mi. State Hy. 99 at Madill, $425,000.

grading, drainage, surf. 5.3 mi. State Hy. 199 at Rovia, $250,000.

McCurtain Co.—grading, drainage, surf. 7 mi. U. S. Hy. 271 at Finley, $280,000.

grading, drainage, surf. 2.2 mi. State Hy. 7 at Finley, $110,000.

grading, drainage, surf. 1 mi. State Hy. 57 at Idabel, $330,000.

grading, drainage, surf. 3 mi. State Hy. 57 at Millerton, $200,000.

McIntosh Co.—grading, drainage, surf. 10.8 mi. State Hy. 9 at Checotah, $637,000.

Muskogee Co.—grading, drainage, surf. 10.4 mi. State Hy. 2 at Warner, $674,000.

Noble Co.—grading, drainage, surf. 2 mi. U. S. Hy. 77 at Perry, $350,000.

Okfuskee Co.—grading, drainage, minor structure, surf. 4.3 mi. U. S. Hy. 62 at Okeemah, $430,000.

Oklahoma Co.—grading, drainage, minor structures, surf. 3 mi. U. S. Hy. 77 at Edmond, $550,000.

Payne Co.—grading, drainage, minor structure, surf. 1 mi. State Hy. 40 at Coyle, $410,000.

Pittsburg Co.—grading, drainage, surf. 4.7 mi. U. S. Hy. 69 at Kiowa, $260,000.

grading, drainage, surf. 7 mi. State Hy. 31 at Krebs, $250,000.

Pontotoc Co.—grading, drainage, minor structures, surf. 16.8 mi. State Hy. 118 at Allen, $200,000.

Pottawatomie Co.—grading, drainage, minor structure, surf. 4.6 mi. U. S. Hy. 270, at Dale, $210,000.

grading, drainage, minor structures, surf. 1.5 mi. State Hy. 18 at Shawnee, $185,000.

grading, drainage, minor structures, surf. 13.3 mi. State Hy. 39 at Asher, $300,000.

Pushmataha Co.—grading, drainage, surf. 7 mi. U. S. Hy. 271, at Clayton, $280,000.

Seminole Co.—grading, drainage, minor structures, surf. 12 mi. State Hy. 99A, at Sasakwa, $260,000.

grading, drainage, minor structure, surf. 11 mi. U. S. Hy. 270, at Seminole, $550,000.

Stephens Co.—grading, drainage, surf. 3 mi. State Hy. 7 at Duncan, $60,000.

grading, drainage, minor structures, surf. 7.5 mi. U. S. Hy. 81 at Comanche, $372,000.

(Continued on page 93)

234 STORIES!

STARRETT BROTHERS AND EKEN, INC. USE AMERICAN HOISTS ON COUNTRY'S LARGEST ARCHITECTURAL CONCRETE JOB

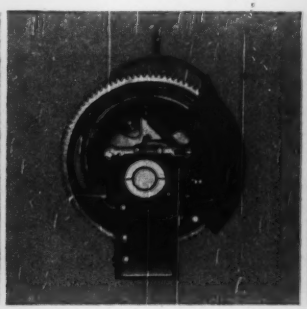
Eighteen X-shaped apartment buildings, each 13 stories high—a total of 234 stories—that's just one part of Parklabrea—the great Los Angeles project of Metropolitan Life Insurance Co.

To pour the oceans of concrete used on the job, the contractors selected 18 American Model 75 General Purpose Hoists and 18 towers for speed, smoothness and economy.

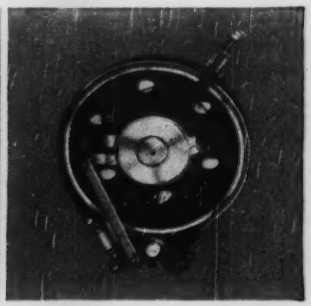
The project is now well on its way to completion. The concrete has moved precisely on schedule . . . and the dependability of American Hoists has again been proved by *performance.*

AMERICAN GENERAL PURPOSE HOISTS—the biggest-selling line of construction hoists in the world—are used at Parklabrea. Shown here is a Model 75, three drum. Notice winch heads on drum shafts—a standard feature of all American Hoists.

GENERAL VIEW of one section of Parklabrea shows the scope of the project. Eighteen American Model 75 General Purpose Hoists will lift 163,000 cubic yards of concrete for the complete job.



EXTERNAL CLUTCHES, contracting band type, help make American Hoists safer—smoother—cooler—easier to service.



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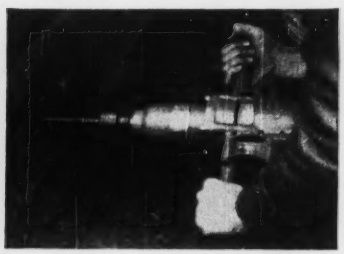
High Cycle Tools Operated by a HOMELITE *Dual Purpose* GENERATOR will greatly reduce your costs

High cycle tools are not only here to stay . . . they're here to *save.* Lighter in weight . . . easier to handle . . . more efficient in operation . . . these modern tools are saving money by cutting down man hours. Yes, and they're saving money on tool repairs because high cycle tools are far easier to keep in good condition.

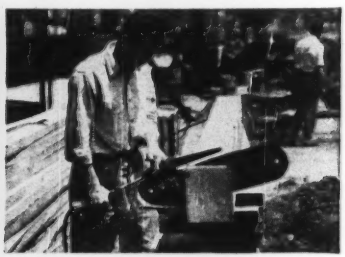
And the beauty of it all is this: — These savings are yours any place on your road if you have a Homelite Dual Purpose Generator. Light enough for one man to carry, this gasoline-engine-driven generator can be easily put into action *anywhere.* It provides plenty of power for operating high cycle tools. Moreover, this same generator can also be used to operate floodlights or your present standard universal tools.

Look into this Homelite Dual Purpose Generator. It's a big step in the right direction towards lower costs through high cycle operations.

For operating high cycle concrete vibrators



For operating high cycle wrenches



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STICK TO THE RULE OF THREE AND YOU'LL ALWAYS STICK TO A HOMELITE

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3. Service. Close field supervision of every Homelite unit is a part of Homelite service. If you ever need repairs, there's a trained Homelite representative near you . . . ready for your call . . . ready to give you instant repair service in the field or in his completely stocked shop.

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Blowers • Chain Saws
• Paving Breakers

PERFORMANCE • DEPENDABILITY • SERVICE

HOMELITE
CORPORATION
1111 RIVERDALE AVENUE • PORT CHESTER, N. Y.

(Continued from page 90)

grading, drainage, minor structures, surf. 8.3 mi. U. S. Hy. 81 at Marlow, $415,000.

Texas Co.—grading, drainage, minor structures, surf. 20 mi. State Hy. 95 at Hooker, $700,000.

Wagoner Co.—grading, drainage, surf. 1.2 mi. State Hy. 51 at Wagoner, $200,000.

Woods Co.—grading, drainage, surf. 9 mi. State Hy. 14 at Waynoka, $400,000. S. K. McClelland, c/o owner ch. engr.

Okla., Oklahoma City—City, City Hall, widn., asph. paving 1 mi. N. 36 St. from Santa Fe to Western Sts. $135,000. H. E. Chase, city engr. CD 5/15.

Okla., Oklahoma City—Oklahoma Co., Court House, asph. 2 mi. S. E. 25 St. road. $110,000. C. W. McFerron, c/o owner, co. engr.

Tex., Hillsboro—Hill Co., Court House, voted bonds, road constr., and paving in Malone Dist. $200,000. CD 9/22.

▲ Tex., Port Arthur—City, bond election Dec. 5, street imprvs., hard paving, concrete curbs and gutters. $2,500,000. Charles P. Smith, Orange, and George J. Schaumberg, American Natl. Bank Bldg., Beaumont, engrs. CD 4/4.

EARTHWORK, WATERWAYS

▲ California—South San Joaquin Irrigation Dist., Manteca, and Oakdale Irrigation Dist., Oakdale, 3 dams with appurtenant power houses, Donnells, Beardsley and Tulloch Dams on Stanislaus River, Stanislaus and San Joaquin Counties, $40,000,000. International Eng. Co., Inc., 1 Montgomery St., San Francisco, consult. engr.

New Jersey—State Dpt. Conservation & Economic Development, 520 E. State St., Trenton, exten. 2 jetties at Beacon and New York Blvds., Sea Girt, $140,000; repairing 19 Avenue Jetty, Belmar, $120,000.

AIRPORTS

Okla., Oklahoma City—HANGAR—City, City Hall, airplane hangar at Tulakes Airport, near Bethany. $100,000. H. E. Chase, city engr. CD 5/15.

Tex., Fort Worth—SERVICE SHOPS—City, City Hall, plans by Wyatt C. Hedrick, 1005 First Natl. Bank Bldg., aircraft service shops. $200,000.

FOREIGN

▲ Portuguese East Africa, Beira—Govt. of Portugal, plans exten. wharves in Beira Harbor. (E. C. A. funds). $1,117,750.

LATIN AMERICA

Mexico, Mexico City—Industrias Unidas de Ato'onicio, S.A., Balderas, 31-404-05, Mexico City, plans linen mill. $500,000.

Mexico, Mexico City—Super Tissues, S.A., Paseo de la Reforma, 1135, Mexico City, plans absorbent tissue papers factory. $250,000.

PUBLIC BUILDINGS

▲ Conn., Glastonbury—SCHOOL—Town, Bd. Educ., Glastonbury, plans by Prentice Freligh & Bailey, 805 Main St., Hartford, brick, steel, concrete high school, $1,000,000.

▲ Conn., Hartford—REGIONAL MARKET—State R. S. Thatcher, comptroller, State Capitol, Hartford, 1 story, brick, concrete block regional market, $1,200,000.

Conn., New Haven—SCHOOL—City, Bd. Educ., plans by Westcott & Mapes, 109 Church St., New Haven, brick, steel, concrete school, Fairhaven Area, $600,000. CD 5/20/48.

Ill., Champaign — SCHOOL — School Bd., Champaign, Junior High School, $250,000-$500,000. CD 6/20/49.

Ill., Chicago—HOUSING—Chicago Housing Auth., 608 S. Dearborn St., plans by Everett F. Quinn, 134 N. LaSalle St., Zone 2, two 148 unit apartments, 23 and Archer Sts. $900,000. CD 1/10/49.

▲† Ill., Chicago—CLINIC—Veterans Admin., Vermont Ave. between H and I Sts. N. W., Wash., 25, D. C., 7 story, bsmnt., concrete, limestone out-patient clinic and regional office, location Medical Center Comm., West Side Medical Center, Ogden and Taylor Sts., Zone 8, $5,000,000.

▲ Ind., Indianapolis—MEDICAL CENTER etc.—Indiana University, Bloomington, University Medical Center, stores and shop bldg. $500,000., heart unit, $250,000, medical service bldg. between $5,000,000 and $6,000,000.

▲ Ia., Davenport—COURT HOUSE—Scott Co., Davenport, $2,900,000 bond election Nov. 7, court house, $4,400,000. Dougher, Rich & Woodburn, 302 Garver Bldg., Des Moines, and Arthur H. Ebeling, Kahl Bldg., archts. CD 11/3.

Ia., Davenport—HOSPITAL—Scott Co., hospital, $500,000. H. L. Brownlee, Davenport, co. engr.

La., Minden—COURT HOUSE, etc.—Webster Parish, voted bonds, court house and jail, $950,000. CD 9/18.

(Continued on page 96)

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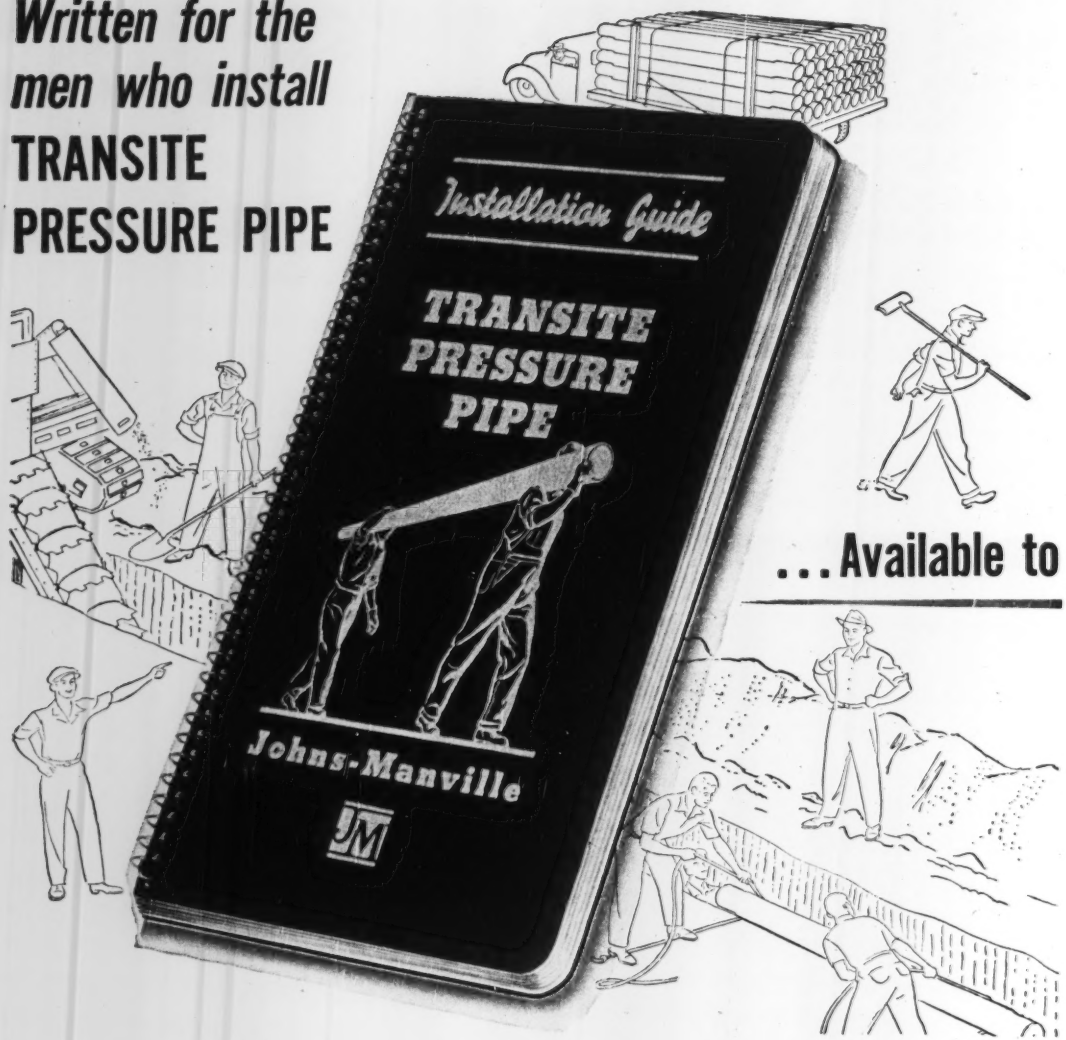

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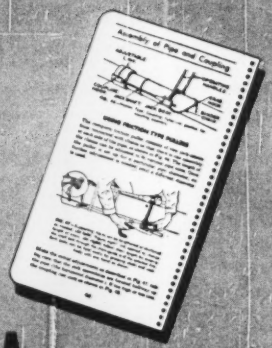
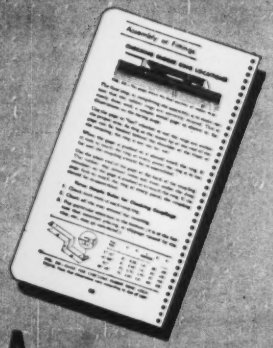
Q. *How is Transite Pipe assembled in the trench?*



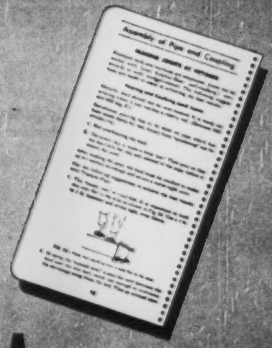
A. By means of the Simplex Coupling, a factory-made joint. See page 38.

Q. *How are joints checked for correct assembly in advance of leakage tests?*



A. By the use of a simple feeler gage as described on page 50.

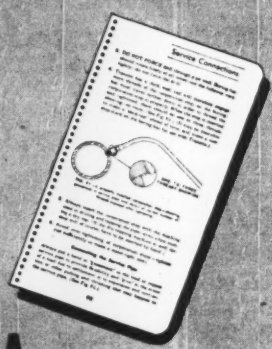
Q. *Are standard practices used for making joints at fittings?*



A. Yes—see "Making Joints at Fittings" page 78.

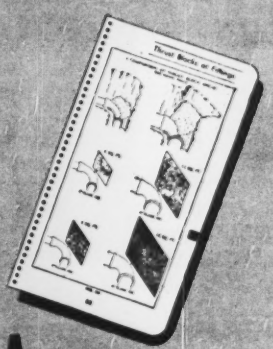
anyone who wants the answers to questions like these

Q. *Can you cut, machine and tap Transite Pipe in the field?*



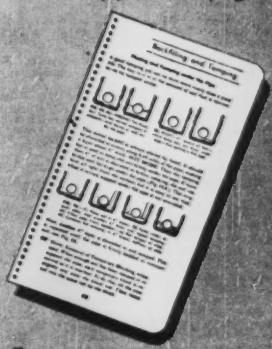
A. Yes—see "Cutting Transite Pipe" page 72 and "Service Connections" page 91.

Q. *How are size and type of thrust blocks at fittings determined?*



A. The Guide gives helpful data, including tables, construction, and location. See page 82.

Q. *What about trench preparation, supporting the pipe, and tamping?*



A. Standard methods are employed. See pages 16, 23 and 97

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EN-11

(Continued from page 93)

▲ **Mass., Boston**—HOUSING—City of Boston Housing Auth., 230 Congress St., plans by M. A. Dyer Co., 24 School St., 2 story, bsmnt., brick, steel 400 housing unit on vacant land slope of Orient Heights, East Boston, $4,000,000. CD 8/19/49.

Mass., Taunton—HOUSING—City of Taunton Housing Auth., Taunton, plans by St. John Smith, 687 Boylston St., Boston, twenty 2 story, bsmnt., 40 veteran housing unit, Proj. 200-2, $400,000. Gordon McNeil, 561 Boylston St., Boston, consult. engr. CD 1/27.

▲ **Mass., Waltham**—HOUSING—City of Waltham Housing Auth., City Hall, 200 housing unit. $1,000,000.

Miss., Clarksdale—SCHOOL—City, voted bonds, school imprvs. $500,000. CD 9/22.

Neb., Lincoln—ART GALLERY—University of Nebraska, 12 and R Sts., construct, build and equip art gallery at university. $921,660.

▲ **N. J., Belleville**—SCHOOL—Bd. Educ., Belleville, Senior High School, $2,300,000.

▲ **N. Y., Brooklyn**—HOUSING—New York City Housing Auth., 63 Park Row, New York, Zone 7, 630 unit housing in Coney Island Area, north of Neptune Ave. on Bay View Ave. $6,300,000; 700 unit housing in Cooper Park area, south of front St. and east of Kingsland Ave., $7,000,000.

▲ **N. Y., Hammels (Sta. Far Rockaway)**—HOUSING—New York City Housing Auth., 63 Park Row, New York, Zone 7, 875 unit housing, north of Rockaway Beach Blvd. and west of Beach 81 St. $8,750,000.

▲ **N. Y., Long Island City**—HOUSING—New York City Housing Auth., 63 Park Row, New York, Zone 7, 550 unit housing at triangle formed by Jackson Ave., Crescent St. and Queens Plaza South. $5,500,000.

▲ **N. Y., New York**—HOSPITAL—Dpt. P. Wks., Municipal Bldg., Zone 7, plans by James W. O'Connor & James F. Delaney, 162 E. 37 St., 11 story tuberculosis and chronic disease hospital, Welfare Island, opposite E. 74 St. HO-140. $21,300,000. CD 1/21/44.

N. Y., New York—LIBRARY—Dpt. P. Wks., Municipal Bldg., Zone 7, plans by Melvin E. Kessler, 118 E. 28 St., Zone 16, 2 story public library alterations, 2556 Bainbridge Ave. $503,500. CD 8/20/45.

▲ **N. Y., New York**—HOUSING—New York City Housing Auth., 63 Park Row, Zone 7, 1,475 unit housing in Clason Point area, north of Bruckner Blvd. and east of Metcalf Ave., $14,750,000; 1,700 unit housing in Fort Schuyler area, east of Balcom St. and north of Schurz Ave. $17,000,000; 1,900 unit housing in East Harlem Triboro Bridge area, south of bridge approach on Franklin D. Roosevelt Dr. $19,000,000; 550 unit housing in area north of West Houston St. and west of West Broadway $5,500,000; 900 unit housing in area south of Madison St. and east of Rutgers St., $9,000,000.

▲ **N. C., Charlotte**—AUDITORIUM, etc.—City, H. A. Yancey, mgr., City Hall, voted bonds, auditorium-coliseum. $3,000,000. CD 9/13.

N. C., Tarboro—HOUSING—Tarboro Housing Auth., c/o McMinn & Norfleet, archts., Greensboro, 75 housing units. $600,000.

O., Maumee—SCHOOLS—Bd. Educ., Maumee Exempted Village School Dist., Maumee, $650,000 bond election Nov. 7, addn. and remodeling schools.

O., Toledo — HIGH SCHOOL — Bd. Educ., Waterville-Whitehouse Monclova Consolidated Local School Dist., Lucas Co., Toledo, $875,000 bond election Nov. 7, high school to be known as Anthony Wayne High School, and remodel existing buildings, near here. Howard Manor & Assoc., Architects & Engineers, Camby Bldg., Bellefontaine, archt.

O., Wilmington—SCHOOL—Bd. Educ., Wilmington, $498,000 bond election Nov. 7, school imprvt. program.

O., Youngstown—SCHOOLS—Bd. Educ., Austintown Local School Dist., 45 to 48 Mahoning Ave. $675,000 bond election Nov. 7, schools. CD 11/12/45.

Okla., Duncan—SCHOOL—Bd. Educ., Duncan, addnl. school, $400,000. CD 3/8/45.

▲ **Ore., Eugene**—SCHOOL—Eugene School Bd., City Hall, plans by Graham B. Smith, Eugene, 300x1,000 ft. high school, $3,000,000. CD 8/8/49.

Pa., Boswell—HIGH SCHOOL—Joint School Dist. of Jenners, Boswell and Jennerstown, 300 Allegeny St., plans by Hunter, Caldwell & Campbell, 3601 5 Ave., Altoona, 2 story brick high school addn., near here. $850,000.

Pa., Hyndman—SCHOOL—Joint School Dist. of Hyndman and Londonderry, R. D. 1, plans by Hunter, Caldwell & Campbell, 3601 5 Ave., Altoona, school. $462,000.

Tex., Brady—SCHOOL—Brady Independent School Dist., Brady, bond election Oct. 25, gymnasium, school, class room addns. $400,000. Recent bond election voided. Avery, Pierce & Norris, Midland, archts. CD 10/5.

Tex., Cleveland—SCHOOLS—Cleveland Independent School Dist., Cleveland, plans by Emory S. White, M & M Bldg., Houston, 15-room masonry school, $300,000; cafeteria and combination gymnasium, $250,000; 12-room masonry school and cafeteria, $250,000.

▲ **Tex., Dallas**—SANATORIUM—Board for Texas State Hospitals & Special Schools, 45 and Lamar Sts., Austin, plans by Walter C. Moore, bd. superv. archt., 45 and Lamar Sts., Austin, and De Witt & Swank, 2025 Cedar Springs St., masonry tuberculosis sanatorium, $2,500,000; masonry hospital for preventive type mentals, $3,000,000. CD 1/23/47.

▲ **Tex., Dallas**—SCHOOLS—Dallas Independent School Dist., Akard and Royal Sts., plans by Buford & Feinberg, 326 Interurban Bldg., South Lisbon School, $300,000; plans by Sam Biderman City Natl. Bank Bldg., Walnut Hill School addn., $250,000; plans by Thomas, Jameson & Merrill, 820 N. Harwood St., masonry Hillcrest High School addn., $298,000; plans by Jack Corgan, 2008 Jackson St., South Oak Cliff School, $450,000. CD 10/6/49.

Tex., Houston—SCHOOLS—Houston Independent School Dist., 1610 Washington St., plans by Finger & Rustay, 711 Nat. Standard Bldg., and Stayton Nunn, 2425 Ralph St. (Co-ord. archt.) school, West Oak Forest area, $350,000; school, MacGregor Terrace, Southern Village areas, $325,000. CD 10/9.

Tenn., Johnson City—STUDENT UNION, etc.—State of Tennessee, Nashville, plans by D. R. Beeson, Johnson City, student union bldg., $425,000; plans by Alfred H. Abernethy, Johnson City, womens dormitory, at East Tennessee State College.

Tex., Nacogdoches—BUILDINGS—Stephen F. Austin State Teachers College, Nacogdoches, plans by Shirley Simons, Broadway at 16 St., Tyler, physical educ. $250,000; fine arts, $325,000; masonry auditorium, $335,000. CD 6/30.

▲ **Tex., San Antonio**—POWER PLANT—San Antonio Public Service Bd., 201 N. St. Marys St., doubling capacity 60,000 kw. electric power plant. $7,000,000. Gibbs & Hill, Inc., 450 Seventh Ave., New York, N. Y., and Quantana Rd., San Antonio, consult. engr.

Wash., Ephrata—COURT HOUSE—Grant Co. Court House, bond election Nof. 7, court house addn. $440,000. Whitehouse & Price, Hutton Bldg., Spokane, archts. CD 10/13.

Wis., New Richmond—TOY FACTORY—City, toy factory, $400,000. Doughboy Industries, Inc., lessee.

▲ **B. C., Vancouver**—HOUSING—Central Mortgage & Housing Corp., 360 Homer St., plans by Semmens & Simpson; Sharp & Thompson, Berwick, Pratt; Duncan S. McNab, 614 W. Pender St., 2 or 3 story, 200-unit low rental housing in area bounded by 33 and 37 Aves. from Ontario to Main Sts. $4,000,000. CD 8/18/49.

COMMERCIAL BUILDINGS

▲ **Calif., San Francisco**—HOSPITAL—Dr. J. Vincent Parasi, c/o J. Lloyd Conrich, 593 Market St., 2 story bsmnt., 48-bed hospital. $1,400,000.

▲ **Calif., South San Francisco**—RESIDENCES—Stonecrest Corp., 3455 19 Ave., San Francisco, 30 residences in tract between El Camino Real and Junipero Serra Blvd., $3,000,000.

Conn., Hartford—LIBRARY—Trinity College, G. W. Funston, pres., 3 story, bsmnt., brick, steel, concrete library, $650,000. CD 9/26/46.

▲ **Conn., Norwalk**—HOSPITAL—Norwalk Hospital, Victor Knauth, exec. chm., Norwalk, plans by York & Sawyer, 101 Park Ave., New York, N. Y., brick, steel, concrete hospital wings $1,460,000. CD 2/6/48.

▲ **Fla., Jacksonville**—OFFICE—Gulf Life Insurance Co., Church St., Zone 1, office, Laura and Church Sts. $3,000,000.

▲ **Ind., South Bend**—LIBERAL ARTS—Notre Dame University, campus, plans by Ellerbe & Co., 333 Roberts St., St. Paul, Minn., liberal arts bulds. $1,000,000. CD 4/20.

La., Lake Charles—HOSPITAL—Lake Charles Memorial Hospital, Lake Charles, plans by Dunn & Quinn, Lake Charles, memorial hospital, $800,000.

▲ **Mass., New Bedford**—HOSPITAL—St. Luke's Hospital, 101 Page St., plans by Curtin & Riley, 45 Newbury St., Boston, 4 story, bsmnt., brick, steel, concrete hospital addn. and 1 story top addn. to existing bldg. $1,500,000. McCarron & Sullivan, Inc., 45 Newbury St., Boston, consult. engrs. CD 11/19/47.

Mass., Worcester—HOSPITAL—Fairlawn Hospital, 189 May St., plans by G. Adolph Johnson, 390 Main St., 2 story, bsmnt., brick, steel hospital addn. $500,000.

▲ **N. J., Fort Monmouth**—HOUSING—First Army, Gouverneur Island, Fort Jay, N. Y., plans by Kelly & Gruzen, 921 Bergen Ave., Jersey City, 600-unit housing for military personnel. $5,500,000. Private sponsor to construct, manage and finance project. CD 12/23/49.

N. Y., New York—OFFICE—Empire State Inc., 350 Fifth Ave., Zone 1, office bldg. alterations. $520,000. Edward E. Ashley, 10 E. 40 St., Zone 17, engr.

N. Y., New York—APARTMENT—Samuel Loeb, 789 West End Ave., plans by S. J. Kessler & Sons 118 E. 28 St., Zone 16, apartment, 441-47 Convent Ave. and 405-449 W. 149 St. $430,000.

Pa., Shaler Twp. (near Pittsburgh)—HOUSING—Shaler Corp., 603 Law and Finance Bldg., Pittsburgh, plans by C. A. Lake, 203 Highland Terrace, Sharpsburg, two story bsmnt., 28x59 ft. frame housing, $920,160. State Subsidized Housing, Sponsored by Comm. of Penna. Dpt. Commerce Planning Bd., Harrisburg.

▲ **Tenn., Nashville**—HOUSING—College Hill Housing, Inc., c/o McKissick & McKissick, archts., Morris Bldg., 216 housing units, shopping center, theater, etc., $10,000,000.

▲ **Tex., Dallas**—HOSPITAL—Methodist Hospital, 301 W. Colorado St., plans by George L. Dahl, 2101 N. St. Paul St., hospital, $1,000,000. CD 4/21.

▲ **Wyo., Casper**—APARTMENT—McKinley Investment Co., Casper, plans by V. N. Jones & Assoc., Republic Bldg., Seattle, Wash., apartment, $1,236,000.

Ont., Toronto—CHURCH—Woodgreen United Church, 855 Queen St. E., plans by Mathers & Haldenby, 15 St. Mary St., church, $400,000.

Que., Montreal—HOSPITAL—Bd. Governors Notre Dame Hospital, 2560 E. Sherbrooke St., hospital addn. $500,000.

INDUSTRIAL BUILDINGS

Ala., Jackson—MILL—Fair Hoisery Co., Reading, Pa., mill addn. $300,000.

Ark., North Little Rock—WAREHOUSE—555 Inc., 3 and Broadway, Little Rock, warehouse 1600 E. Washington St. $400,000.

▲ **Calif., Pittsburg**—PLANT EXPANSION—Dow Chemical Co. 634 S. Spring St., Los Angeles, plant expansion, $1,500,000.

Calif., Santa Clara—PLANT—Santa Clara Cold Storage & Freezer Co., Santa Clara, cold storage plant, $400,000.

▲ **Calif., Santa Cruz**—PLANT—Wm. Wrigley Jr. Co., 410 N. Michigan St., Chicago, Ill., chewing gum plant. $3,000,000.

▲ **Ind., La Porte**—FACTORY—Allis-Chalmers Co., 1126 S. 70 St., Milwaukee, Wis., plans by Chas. W. Cole & Son, 220 W. La Salle St., South Bend, factory, $2,000,000.

Mass., Quincy—PLANT—Proctor & Gamble Co., Gwynne Bldg., Cincinnati, O., 6 story, brick, steel mfg. plant addn., 780 Washington St. $350,000, H. K. Ferguson Co., 1783 E. 11 St., Cleveland, O., consult. engr.

Minn., Minneapolis—GARAGE—Minneapolis Auto Park, Inc., L. Wakefield Jr., pres., H. E. Halladay, atty., 1300 Soo Line Bldg., plans by Larson & McLaren, 1901 Foshay Tower, and D. L. Briegel & Assoc., 2631 Woodward Ave., Detroit, Mich., assoc. archts. and engrs., 4 story, 6 levels, parking garage, 4 St. and Marquette Ave. $600,000.

N. Y., Queens Village—SERVICE STATION, etc.—Assets Control Co., c/o William Dowling, archt., 350 Fifth Ave., New York, Zone 1, service station, bowling alleys, skating rink and restaurant, Hillside Ave., 89 Ave., Braddock Ave. and Springfield Blvd. $400,000.

Ore., Astoria—FACTORY—Plywood Corp., c/o Norman Jacobson, Kalama, Wash., 73,000 sq. ft. plywood factory. $750,000.

▲ **Pa., Sharon**—STEEL MILL—**Sharon Steel Corp.**, Sharon, steel mill addn., alterations, new blast furnace, addnl. open hearth furnaces, new blooming mill, hot strip mill and general imprvs. $40,000,000. F. C. Mark, Box 537, Sharon, engr. CD 1/14/49.

▲ **Pa., Shawville**—PLANT—Penna Electric Co., Johnstown, plans by Gilbert & Assoc., Inc., 412 Washington St., Reading, electric generating plant. $22,000,000, incl. equip.

▲ **Ont., Sarnia**—PLANT—General Tire & Rubber Co. of Canada Ltd., 366 Adelaide St. W., Toronto, mfg. plant on 26 acre site Ontario Hy. 40. $5,000,000.

UNCLASSIFIED

▲ **Colorado — RURAL DISTRIBUTION LINES**—Intermountain Rural Electric Assoc., Littleton, 270 mi. rural distr. lines, 60 mi. transmission line and sys. imprvs., Jefferson Co. $1,430,000.

Conn., Storrs—FOOTBALL STADIUM—State, R. S. Thatcher, comptroller, State Capitol, Hartford, plans by Frederic C. Teich, 252 Asylum St., Hartford, football stadium. $350,000. Hubbard Lawless & Blakeley, 110 Whitney Ave., New Haven, consult. engrs. CD 1/18.

Florida—RURAL DISTRIBUTION LINES—Lee County Electric Co-operative, Fort Myers, 270 mi. rural distr. lines, Lee Co. Approx. $200,000. E. P. McLean Eng. Co., Moultrie, Ga., consult. engr. CD 7/10.

▲† **Fla., Mayport**—FACILITIES—Yards & Docks, Annex, Navy Dpt., Arlington, Va., constr. facilities at Mayport Carrier Base, incl. dredging of area, wid'n. channel, piers, drainage runways, surf., providing telephone lighting, water services, $4,000,000. CD 10/12.

Illinois—RURAL DISTRIBUTION LINES—Western Illinois Electric Co-operative, Carthage, 45 mi. rural distr. lines, 39 mi. tie line and sys. imprvs. $339,000. CD 11/18/48

Kan., Lawrence—PARKING AREA—City, bond election Nov. 7, parking area off street, $150,000, J. C. Harper, Lawrence, city engr.

La., Eunice—NATURAL GAS SYSTEM—Town, c/o mayor, voted bonds, natural gas sys., $200,000. CD 9/18.

Missouri—RURAL DISTRIBUTION LINES—Black River Electric Co-operative, Ironton, 126 mi. rural distr. lines and sys. imprvs., Reynolds Co. $405,000.

Nebraska—RURAL DISTRIBUTION LINES—South Central Membership Assn., Nelson, 296 mi. rural distr. lines, Adams, Clay, Fillmore, Nuchols, Hamilton, Thayer and Webster Counties. $492,000. Flora Eng. Co., 1717 E. Colfax Ave., Denver, Colo., consult. engr. CD 4/21/49.

Okla., Pryor—ELECTRIC SYSTEM—City, voted bonds, electric distr. sys. $180,000. W. R. Holway & Assoc., 302 E. 18 St., Tulsa, consult. engrs. CD 10/9.

South Carolina—RURAL DISTRIBUTION LINES—Horry Electric Co-operative, Conway, 105 mi. rural distr. lines and sys. imprvs., Horry Co. $220,000.

Ont., London—ARENA—City, R. H. Cooper, clk., plans by T. C. McBride, c/o owner, arena at Queens Park, Approx. $350,000. H. Meier, 432 Richmond St., engr.

▲ **Ont., St. Catherines**—ATHLETIC PARK—City, H. L. Gray, parks supt., plans by Wilson A. Salter, 7 Welland Ave., athletic park incl. baseball diamonds, with stands, night lighting fixtures, dressing and rest room facilities. $1,000,000.

▲ **Que., Montreal**—EXHIBITION STRUCTURE—Le Palais du Commerce, 266 Youville Pl., plans by R. J. Des Gardins, 2674 Hochelaga St., 2 story, 150x500 ft., concrete, brick, stone exhibition structure, $1,000,000.

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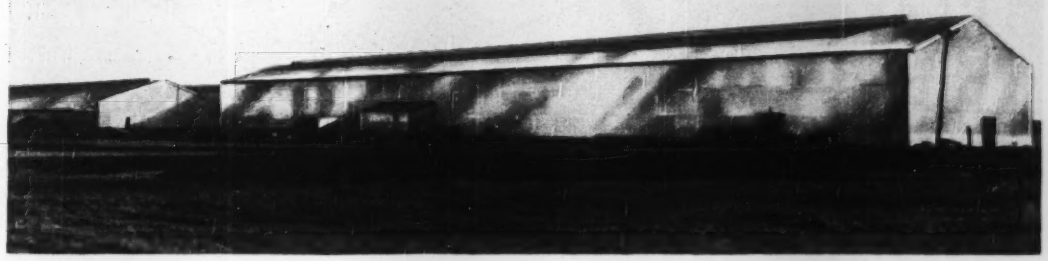

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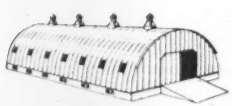

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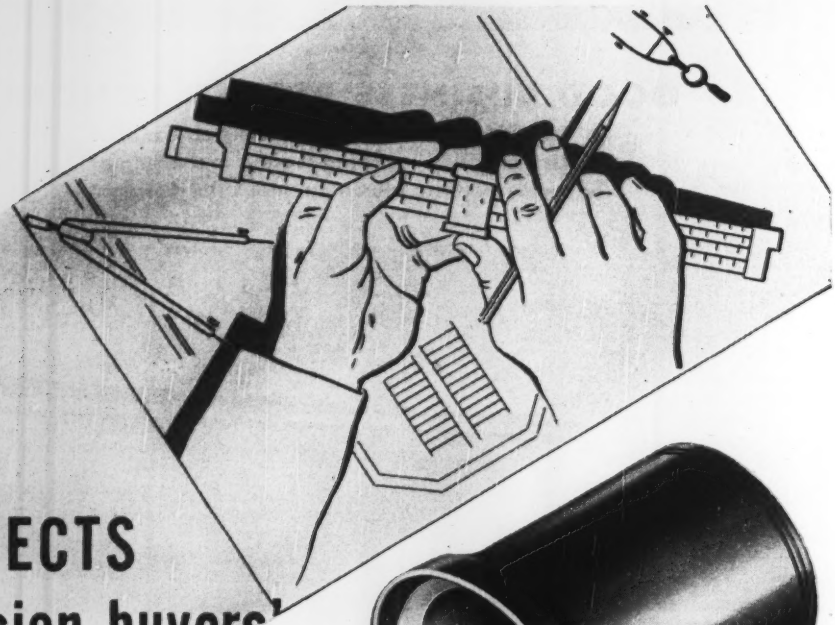

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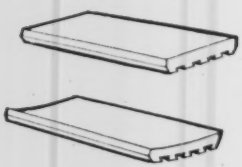
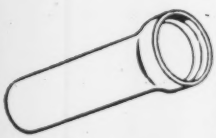


LINER PLATES



STANDARD-STRENGTH CLAY PIPE

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C-458-3

CONSTRUCTION REPORTS-Second Section

WATER SUPPLY

BIDS ASKED

† **Maine and Massachusetts**—B.A. 11/10—U. S. Eng., First Coast Guard Dist., 447 Commercial St., Boston, Mass., drill 10 water wells, Camden, St. George, Sargent Head, Deer Isle, Southwest Harbor, Winter Harbor, York, Monhegan, all in Me., Gloucester and Rockport, Mass.

Fla., Fort Lauderdale—B.A. 11/13—Office of City Auditor and Clerk., elevated steel water tank for WW sys. Plans deposit $15. F. D. Rankins, city mgr., adv. ENR 11/2.

CONTRACTS AWARDED

Ala., Mobile—City, WW imprvs., Contr. G, Big Creek Water Supply Proj., to Dozier Bros. Constr. Co., Mt. Meigs, $171,225. Bids 10/19. CD 10/11.

Calif., Long Beach—Long Beach City Water Dpt., 215 W. Broadway, 6 steel water tanks, appurtenances, to Pittsburgh-Des Moines Steel Co., Box 329, Santa Clara, $570,369. Bids 10/13, awarded 10/19. CD 9/28.

Calif., Sierra Madre—City Council, 55 W. Sierra Madre Blvd., water transmission lines and structures, to A. B. C. Constr. Co., 14346 Lakewood Blvd., Paramount, $157,372. Awarded 10/14. CD 8/11.

SEWERS, WASTE DISPOSAL

BIDS ASKED

Pa., Mansfield—B. A. 11/8—Dpt. Property & Supplies, 1400 N. 9 St., Harrisburg, storm sewers at Mansfield State Teachers College. Plans deposit $5. Mark C. Krause, Williamsport, engr.

Calif., Blythe—B. A. 11/14—City Council, City Hall, sewage treatment plant and 4,962 ft. 15 in. vitr. clay outfall sewer. $50,000. Plans deposit $10. Currie Eng. Co., Andreson Bldg., San Bernardino, engr.

Tex., Yorktown—B.A. 11/15—City, sanitary sewage disposal plant and sys. imprvs. $50,000. Extended date. Frank T. Drought, 117 W. Pecan St., San Antonio, engr. CD 10/25.

LOW BIDDERS

Calif., Fresno—City, City Hall, Oct. 19, sanitary sewerage sys., from Western Constr. Co., 307 W. Hampton Way, $184,369.

Mo., Kansas City—City, P. Wks. Dpt., City Hall, Zone 6, storm sewers, Northeast Industrial Dist. area between Missouri River and Bluff from Trost to Woodland Aves. and Missouri River to Bluff from Prospect to Bellefontaine Aves., from Charles Torson Constr. Co., 1890 Woodsweather Rd., Zone 6, $67,436 and $68,067 respectively.

▲ **N. J., Trenton**—Ewing-Lawrence Twps. Sewage Auth., 156 N. State St., sewer pipes, Sect. E, from N. A. Bugbee, 54 Oakland St., $695,000***Sect. H, from C. F. Mclanka & Sons, Inc., 1317 Bergen Ave., Union City, $596,000***Sect. I, from Leo Butler, 9217 51 Ave., College Park, Md., $947,043. CD 8/17.

N. C., Williamston—Town, Robert H. Cowen, mayor, Williamston, Oct. 17, Contr. 1, sanitary sewer extens., from Barnhill & Long, Inc., Tarboro, $149,999. CD 10/2.

O., Toledo—City, City Hall, Oct. 17, 6,500 lin. ft. 12- to 48-in. Storm Sewer 1670, North Toledo, from R. P. Caffery Co., Springfield, $96,183. Est. $94,585; rejected bids Oct. 17, approx. 160,000 lin. ft. 12- to 54-in. Storm Sewer No. 1673, Homeville Dist. L. B. $248,751. Est. $165,615. Will re-advertise. CD 9/18.

Pa., Doylestown—Doyleston Boro, Doylestown, Oct. 13, sewage treatment plant, from Counties Contg. & Constr. Co., 9 St. and Sedgeley Ave., Phila., $106,846. CD 10/11.

Pa., West Chester—West Chester Boro, West Chester, Oct. 10, 2 sewage treatment plants, Contr. 2 (mechanical work) from Municipal Service Co., 908 Grant Ave., Kansas City, Mo., $154,900. CD 9/21.

Pa., West Chester—West Chester Boro, Oct. 16, Contr. 1, 2 sewage treatment plants, from Vanguard Constr. Corp., 369 Lexington Ave., New York, N. Y. $483,720. CD 9/21.

R. I., Cranston—Bd. Contr. & Supply, City Hall, Oct. 23, lateral sewers, appurtenances, from Capaldi Bros. Constr. Co., 278 Silver Spring St., Providence, C-1 $192,194; C-2, $98,758; C-3, $100,604. Fay, Spofford & Thorndike, 11 Beacon St., Boston, Mass., engrs.

Que., L'Islet—Municipality, R. Boulanger, secy., installing sewers and WW, from J. A. Auclair, 105 Royal Ave., Giffard. Approx. $230,000. CD 7/14.

CONTRACTS AWARDED

▲ **Calif., Los Angeles**—City, Bd. P. Wks., City Hall, elutriation sludge concentration sys. at Hyperion Activated Sludge Plant in El Segundo, to Peter Kiewit Sons Co., 345 Kfeways Ave., Arcadia, and Fred J. Early Junior Co., Inc., 22124 S. Vermont Ave., $2,102,298. Bids 10/18, awarded 10/20. CD 10/23, under LB.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

November 8	November 15
Kansas	New York
November 9	November 16
Arizona	California
North Carolina	November 22
	Pennsylvania

† **Maryland**—B.A. 11/28—At office H. J. Spelman, div. engr., Bureau P. Rds., Dpt. Commerce, 1440 Columbia Pike, Arlington, Va.

Prince Georges and Anne Arundel Counties—reln.-con. structure and approaches 0.109 mi. Baltimore-Washington Parkway, Proj. 1F2. Plans deposit $10; adv. ENR 11/2.

LOW BIDDERS

Calif., San Francisco—Dpt. P. Wks., City Hall, Oct. 18, Stanley Drive underpass adjacent to Junipero Serra Blvd., incl. channelization, Spec. 20,423, from Chas. L. Harney 575 Berry St., $445,385. CD 10/3.

Illinois—State Div. Hys., Springfield, Oct. 20, bridge on U. S. Route 40, Cumberland Co., from Standard Paving Co., 30 N. La Salle St., Chicago, Zone 2, $56,422***building 1 bridge, widn. 1 bridge and 1 culvert exten. Ill., Route 37, Franklin and Williamson Counties, from R. W. Ford, 704 S. Market St., Marion, $122,976***widn. 4 bridges and bldg. 2 culverts U. S. Route 50 Marion Co., from Mantz & Oren, Inc., 1094½ Banker St., Effingham, $80,793***widn. 1 bridge on Ill. Route 1, Massac Co., from E. T. Simonds Constr. Co., Carbondale, $67,820*** c. conc. approaches 0.95 mi. to grade separations U. S. Route 12 Ill. Routes 59 and 176, Lake Co., from Eric Bolander Constr. Co., Winchester Rd., Libertyville, $476,708. CD 10/4.

New Jersey—State Hy. Dpt., Trenton, Oct. 24, bridge, approaches at West Saddle River Rd., on Route S4B Sect. 1B, Fed. Proj. U-189 (4), Fairlawn, Bergen Co., from M. Sappah & Sons, Inc., Kindermack Rd., Montvale $119,316. CD 10/3.

North Carolina—State Hy. & Pub. Wks. Comn., Raleigh, Oct. 24, structures on U. S. 17, approx. 3 mi. northeast of Jacksonville, southeast to N. C. 24 at Piney Green, Proj. 2-455, S-426 (1), Onslow Co., from Sanford Constr. Co., Sanford, $57,703, est. $25,000-$50,000***structures on county road from Pireway Crossing Brunswick-Columbus line to Regan, Proj. 3-9-28-213, 3-9-29-212, Brunswick and Columbus Counties, from Pyramid Constr Co., Wilmington, $68,498, est. $50,000-$75,000***bridge, approaches 0.253 mi. U. S. 29-A, widn. existing bridge over Southern Ry. and constructing bridge over Irish Buffalo Creek, incl. approaches on U. S. 29-A, in Concord, Proj. 6141, Cabarrus Co., from W. F. Brinkley & Son Constr. Co. Inc., Box 595, Granite Quarry, $114,157, est. $100,000-$125,000 ***structures from point 0.5 mi. east of Fallston, east to Bethpage Church, 2 mi. south of N. C. 27 and approx. 6 mi. west of Lincolnton, Proj. 9-405, S-395 (1), Cleveland and Lincoln Counties, and structures from point 1.3 mi. east of Bakers, N. C., southeast to U. S. 74 near its intersection with N. C. 151, Proj. 6926, F-680 (3), Mecklenburg and Union Counties from Wilson Constr. Co., Inc., Box 603, Salisbury, $88,336, est. $75,000-$100,000 and $146,907, est. $160,000-$175,000 respectively ***structures on N. C. 561, from N. C. 39 and 59 in Louisburg, northeast to N. C. 58 in Centerville, Proj. 4182, S-225 (2), Franklin Co., from E. P. Brinkley, 936 Cowper Dr., Raleigh, $80,011, est. $75,000-$100,000. CD 10/18, under Bridges and Streets and Roads.

CONTRACTS AWARDED

▲ **Rhode Island**—State of Rhode Island, State House, Providence, Olneyville Expressway, R. I., Contr. 4917, Hartford Ave. to viaduct on Troy St. and Contr. 5019, Westminister St. to Harris Ave., to M. A. Gammino Constr. Co., 728 Valley St., Providence, $811,029 and $1,789,383 respectively. CD 9/14/49, and 10/10, under LB.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

November 7	November 14
Massachusetts	Massachusetts
November 8	November 15
Kansas	New York
November 10	November 22
Pennsylvania	Pennsylvania

† **Arkansas**—B.A. 11/7—U. S. Eng., P. O. Box 61, Tulsa, 1, Okla., grading, surf. 12 mi. roads in Camp Chafee, near Fort Smith, $110,000.

La., Metairie—B.A. 11/8—Jefferson Parish Police Jury, Court House Bldg., c. conc. pavement, curbing, etc., on 5 streets. Plans deposit $25. S. N. Applewhite, 424 Millandon St., New Orleans, engr.

New Jersey—B.A. 11/10—New Jersey Turnpike Auth., 65 Prospect Ave., Trenton.

Essex Co.—Contr. 68, grading, area drainage for Service Areas 10-N and 10-S on both sides of turnpike between Sta. 456 and Sta. 485, Sect. 5 and constr. 1400 ft. sewer line and fully equipped temporary sewage lift station, Woodbridge Twp. Plans deposit $5. Fay, Spofford & Thorndike, 25 Livingston Ave., New Brunswick, engrs. CD 7/13/49.

New Jersey—B.A. 11/14—New Jersey Turnpike Auth., 65 Prospect Ave. Trenton.

Hudson and Bergen Counties—Contr. 64, two interchanges at Secaucus and Route 6 in Ridgefield Park. CD 7/13/49.

New Jersey—B.A. 11/17—New Jersey Turnpike Auth., 65 Prospect Ave., Trenton.

Union and Essex Counties—Contr. 64, paving interchanges at Port St. and Raymond Blvd. in Newark and Elizabeth CD 7/13/49

† **Virginia**—B.A. 11/21—Bureau Pub. Roads, Dpt. Commerce, 1440 Columbia Pike, Arlington,

Shenandoah Co.—construct 6.121 mi. Virginia Forest Hy. Project 78 B, 10-A, incl. 11,110 tons aggregate and 138,000 gal. asphalt. Plans deposit $10.

SOON LETS CONTRACT

Calif., Los Angeles—Prudential Insurance Co., c/o Barnett, Hopen & Smith, engrs., 35 S. Raymond Ave., Pasadena, soon lets contract curbs, gutters, walks, storm drains, etc. Coliseum St. from LaBrea to Santa Barbara Ave. Approx. $50,000.

Calif., Santa Barbara—McDonald Bros., 6014 W. Adams Blvd., Los Angeles, soon lets contract streets, curbs, gutters sewers, storm drains in San Roque Gardens Tract, $100,000.

LOW BIDDERS

Michigan—State Hy. Comn., Lansing, Oct. 18, 2 concrete shafts, Warren Ave. water main in tunnel across Edsel Ford Expressway, Proj. UI B 29 of 82-22-10 C1 (UI 391 19), Wayne Co., from F. C. Atledwed, St. Clair, $269,845. CD 10/6.

▲ **North Carolina**—State Hy. & Pub. Wks., Comn., Raleigh, Oct. 24, from Dickerson, Inc., Box 448, Monroe, traffic bound macad. and b. conc. binder and surf. course 6.88 mi. N. C. 49 from intersection of N. C. 49 and 62 approx. 5.4 mi. south of Anderson southwest to point on U. S. 70, 0.9 mi. east of Haw River, Proj. 5015, F-593 (2), Alamance Co., $199,421, est. $200,000-$225,000; b. conc. surf. course 11 mi. from Clayton to Archers Lodge, from M. A. Bunn farm on N. C. 39 to Wake Co. line, Proj. 4-9-36-211, 4-9-36-218, Johnston Co., $56,940, est. $50,000-$75,000; grading, subgrade reinf. 14.51 mi. from East Ave. and 6 St. in Ayden, southwest to R. H. Smith's Store near St. Johns and from point 1.2 mi. northeast of St. Johns southeast to 20 ft. sand asph. pavement 1 mi. south of Pitt Co. line, from W. 6 St. and Snow Hill St. in Ayden, west and south to Pleasant Plains Church and on W. 6 St. in Ayden from Snow Hill St. southeast to N. C. 11, Proj. 2-9-24-219, 2-9-17-223, Pitt and Craven Counties, $84,351, est. $75,000-$100,000; traffic bound macad., bit. surf. tr. or sand asph. or b. conc. surf. 6.59 mi. from point on U. S. 17, approx. 3 mi. northeast of Jacksonville, southeast to N. C. 24 at Piney Green, Proj. 2-455, S-426 (1), Onslow Co., $121,206, est. $125,000-$150,000.

from Eidson Const. Co., Mocksville, grading 6.04 mi. from junction county roads approx. 2 mi. north of Trenton, north to Cove City, Proj. 2-352, S-422 (1), Jones and Craven Counties, $62,922, est. $50,000-$75,000; grading 5.16 mi. from point 1.3 mi. east of Bakers, southeast to U. S. 74 near its intersection with N. C. 151, Proj. 6926, F-680 (3), Mecklenburg and Union Counties, $216,574, est. $250,000-$300,000***from Towles-Cline Constr. Co., Box 1617, Wilmington, traffic bound macad., sand asph. or b. conc. base and b. conc. surf., concrete curb and gutter 0.695 mi. from Dawson St. along Third St. to Dock St. in Wilmington, Proj. 3-6-92-123, New Hanover Co., $53,198, est. $50,000-$75,000; STBC, sand asph. surf. course, 4.71 mi. county road from Pireway Crossing Brunswick-Columbus Co. line to Regan, Proj. 3-9-28-213, 3-9-29-212, Brunswick and Columbus Counties, $119,104, est. $75,000-$100,000.

from Wilson Constr. Co., Inc., Box 603, Salisbury, traffic bound macad. 0.445 mi. from point on U. S. 19-E, west of Burnsville, east across Cane River, Proj. 8930, F-392 (3), Yancey Co., $71,289, est. $50,000-$75,000***from A. R. Thompson, Contractor, Inc., Rutherfordton, STBC, bit. surf. tr. or b. conc. surf. course 7.66 mi. from intersection of county road northwest of Gilkey, via McIntyre to intersection with county road, south of Pine Mountain, from U. S. 221 at Gilkey northwest to intersection with county road, from U. S. 221 at Flack Grocery west to intersection with county road, Proj. 9-9-86-210, Rutherford Co., $58,532, est. $75,000-$100,000*** from Barrus Constr. Co., Box 561, Kinston, sand asph. or b. conc. surf. course 11.28 mi. from N. C. 101 at Harlowe northeast to Adams Creek, Proj. 2-9-17-205, 2-9-16-214, Craven and Carteret Counties, $71,615, est. $50,000-$75,000***from J. S. Hill Constr. Co., Box 122, Washington, grading 8.5 mi. from county cross roads approx. 1 mi. south of Everetts, southeast through Bear Grass to U. S. 17, Proj. 1-9-10-203, Martin Co., $56,449, est. $50,000-$75,000.

from Zeigler-Cline Constr. Co., Box 386, Fayetteville, sand asph. or b. conc. surf. course 15.3 mi. from Ironhill via Bethel Church and Nakina to N. C. 130 at Old Dock, county road from Mollie to Bethel School Dr. at Old Dock School, Proj. 3-9-29-217, Columbus Co., $61,425, est. $50,000-$75,000*** from F. D. Cline Constr. Co., Box 349, Raleigh, b. conc. surf. course 10.9 mi. from N. C. 56 at Long's Filling Station to Nash Co. line, from N. C. 581 at

Justice to Nash Co. line, from N. C. 561 at West Grocery, north to Laurel Milling Co. from N. C. 231 to Rocky Cross, Proj. 4-9-35-210, 4-9-35-211, 4-9-37-216, Franklin and Nash Counties, **$56,501**, est. $50,000-$75,000***from E. H. Hines Constr. Co., Box 924, Greenwood, S. C., STBC, bit. surf. tr. or b. conc. surf. 8.47 mi. from point 0.51 mi. east of Fallston, east to Bethpage Church 2 mi. south of N. C. 27 and approx. 6 mi. west of Lincolnton, Proj. 9-405, S-395 (1), Cleveland and Lincoln Counties, **$79,486**, est. $100,000-$125,000***from Nello L. Teer Co., Box 1131, Durham, added material or PCSBC, bit. surf. tr. or sand asph. or b. conc. surf. 21.92 mi. N. C. 561, from N. C. 39 and 59 in Louisburg, northeast to N. C. 58 in Centerville, Proj. 4182, S-225 (2), Franklin Co., **$301,002**, est. $300,000-$400,000. CD 10/18.

Tex., Bellaire—City, Oct. 18, asph. paving, Pine and other streets and c. conc. pavement, concrete curbs and gutters, Avenue B, from H. C. Pate & Son, Baytown, **$57,775**, est. $50,000 and **$51,000**, est. $55,000 respectively. G. M. Hillyer, city engr.

Wisconsin—State Hy. Comn., Madison, Oct. 24, Contr. 1, grading, draining, base course 7.806 mi. The Courteray-Hayward Rd., S. T. Hy. 27, Proj. F-049-1, Sawyer Co., from Victor Nelson, Superior, **$177,432**. CD 10/4.

CONTRACTS AWARDED

Calif., San Diego—City Council, Civic Center, imprv. Midway Dr. between West Point Loma Blvd. and San Diego River Floodway, to Walter H. Barber, 7309 El Cajon Blvd., La Mesa, **$118,192**. Bids 10/3. Alden K. Fogg, city engr.

Kan., Topeka—City, street repairs, Sect. 1, asphalt resurf. to Douglas Constr. Co., 818 Quincy St., **$102,320**. Bids 10/10. W. E. Baldry, city engr.

La., Lake Arthur—Town, street imprvs., to T. L. James & Co., Inc., Ruston, **$13,149**. Bids 10/19. CD 9/28.

New Jersey—State Hy. Dpt., Trenton grading, drainage, 2 bridges, paving 0.6 mi. Route 151 Sect. 1-B, Federal St. to Pennsylvania-Reading Seashore Lines (Wright Ave.) Fed. U-60-(15), Camden Co., to Francis A. Canuso & Son, 804 S. 12 St., Phila., Pa., **$968,651**. Bids 10/17, awarded 10/24. CD 10/20, under LB.

New York—Bureau Contracts & Accounts, Albany, constr. 1.18 mi. and 420 ft. four span bridge over Neversink River, on Route 17, Sullivan Co., to Serafini Constr. Co., Inc., Conklin Rd., Binghamton, **$832,930**. Bids 10/11. CD 10/17, under LB.

▲ **Rhode Island**—State Hy. Dpt., Providence, bit. 2.65 mi. Louisquisset Pike, R. I., Contr. 5002, Providence Co., to M. A. Gammino Constr. Co., 728 Valley St., Providence, **$1,230,726**. Bids 9/6, awarded 10/18. CD 10/10, under LB.

EARTHWORK, WATERWAYS

BIDS ASKED

† **Colorado and Kansas**—B.A. 11/8—Bureau Reclamation, Dept. Interior, St. Francis, Kan., test section for embankment protection, St. Francis Unit, Upper Republican Div., Missouri River Basin Proj., at site of Bonny Dam, near Halle, Colo., Spec. DC-3227. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

† **Iowa**—B.A. About 11/9—U. S. Eng., 1217 U. S. Post Office & Custom House, St. Paul, 1, Minn., removal channel snag obstruction along lower reach of Upper Iowa River in northeastern corner of Allamakee Co. in northeastern corner of Iowa, about 2 mi. south of New Albin.

† **Illinois**—B.A. 11/10—U. S. Eng., 830 West Broadway, Louisville 3, Ky., Russell and Allison Levee Repairs, Lawrence Co., Serial No. CIVENG -15-029-51-53.

LOW BIDDERS

Calif., Los Angeles—City Harbor Dpt., Branch City Hall, San Pedro, reclamation and maintainance dredging and constr. dike, from Masco Corp., 14409 Paramount Blvd., Paramount, **$228,300**. CD 10/3, under Unclassified.

† **Missouri**—U. S. Eng., 300 Broadway, Little Rock, Ark., rejected bids Oct. 17, levee drainage structures pumping station, East Poplar Bluff Flood Protection, Black River, near Poplar Bluff, CIVENG 03-050-50-97. L. B. **$261,360**. CD 9/29.

Pennsylvania—Dpt. Forests & Waters, 405 Education Bldg., Harrisburg, Oct. 25, imprv. work in the channel of Tunungwant Creek, incl. 415,000 cu. yd channel excav., 82 cu. yd. rein.-con., 12.2 acres of seeding and 260 sq. yds. dumped riprap, McKean Co., from S. A. Whitney & Co., Bradford, **$183,142**. CD 10/4.

▲ † **Washington**—Bureau Reclamation, Dpt. Interior, Ephrata, Wash., Oct. 19, earthwork, concrete lining for Main Canal, Station 255 plus 85.56 to 326 plus 90, Columbia Basin Proj., Spec. 3190, from J. A. Terteling & Sons, Inc., 4011 Fairview Ave., Boise, Idaho, $1,043,275. Est. $1,002,869. CD 9/20.

† **Washington**—Bureau Reclamation, Dpt. Interior, Ephrata, earthwork, structures West Canal, Station 044 plus 50 to 2840 plus 00, Quincy, Columbia Basin Proj., Spec. 3180, from J. A. Terteling & Sons, 4011 Fairview Ave., Boise, Idaho, **$484,923**. Est. $643,254. CD 9/19.

CONTRACTS AWARDED

▲ † **Georgia and South Carolina**—U. S. Eng., Post Office Bldg., Savannah, Ga., constr. Clark Hill Powerhouse and appurtenant works, Clark Hill Proj., Savannah River Basin, Savannah River, Serial No. CIVENG -09-133-51-2, to J. W. Bateson Co., Inc., Irwin-Keasler Bldg., Dallas, Tex., and Stolte Inc., 8451 San Leandro St., Oakland, Calif., **$7,079,000**. Bids 10/5. CD 10/9, under LB.

† **Wyoming**—Bureau Reclamation, Dpt. Interior, Riverton, Schedules 2 and 5, constr. earthwork, canal lining, structures for Wyoming canal, Station 2560 plus 00 to 3304 plus 00; Badger lateral, Station 0 plus 00 to 59.37; laterals W48.59 to W61.56; sublaterals and Cottonwood drain, Riverton Proj., Spec. 3189, to Sharreck & Pursel, Casper, **$729,630**. Bids 10/11, awarded 10/19. CD 10/23, under LB.

AIRPORTS

BIDS ASKED

† **N. Y., Niagara Falls**—SPRINKLER SYSTEM—B.A. 11/9—Pub. Wks. Office, Third Naval Dist., 90 Church St., New York, Zone 7, sprinkler sys. exten. in Hangar Bldg., Naval Air Station.

Colo., Denver—HANGAR, etc.—Bids Asked—United Airlines, Inc., 5959 S. Cicero St., Chicago, 32, Ill., hangar and office addns. $250,000.

LOW BIDDERS

▲ **Conn., Windsor Locks**—TERMINAL—State, R. S. Thatcher, comptroller, 114 State Office Bldg., Hartford, Oct. 11, terminal bldg., Bradley Field, from Associated Constr. Co., 1010 Wethersfield Ave., Hartford, **$1,845,000**. CD 9/21.

† **Fla., Cocoa**—HOUSES, etc.—U. S. Eng., P. O. Box 4970, Jacksonville, Znoe 1, Oct. 17, concrete block houses, tunnels and control stations at Long Range Proving Grounds near here, and Patric Field, Eng. 08-123-51-3, from Lawrence C. Pearce Co., 1201 Kings Ave., Jacksonville, Zone 7, **$523,118**, est. $726,809. CD 10/4.

† **Fla., Jacksonville**—SPRINKLER SYSTEM—U. S. Navy, Charleston Naval Dist., Charleston, S. C., cancelled bids to have been opened Oct. 19, installing sprinkler sys. at Naval Air Station, NOY 22632, Spec. 25225. CD 10/10.

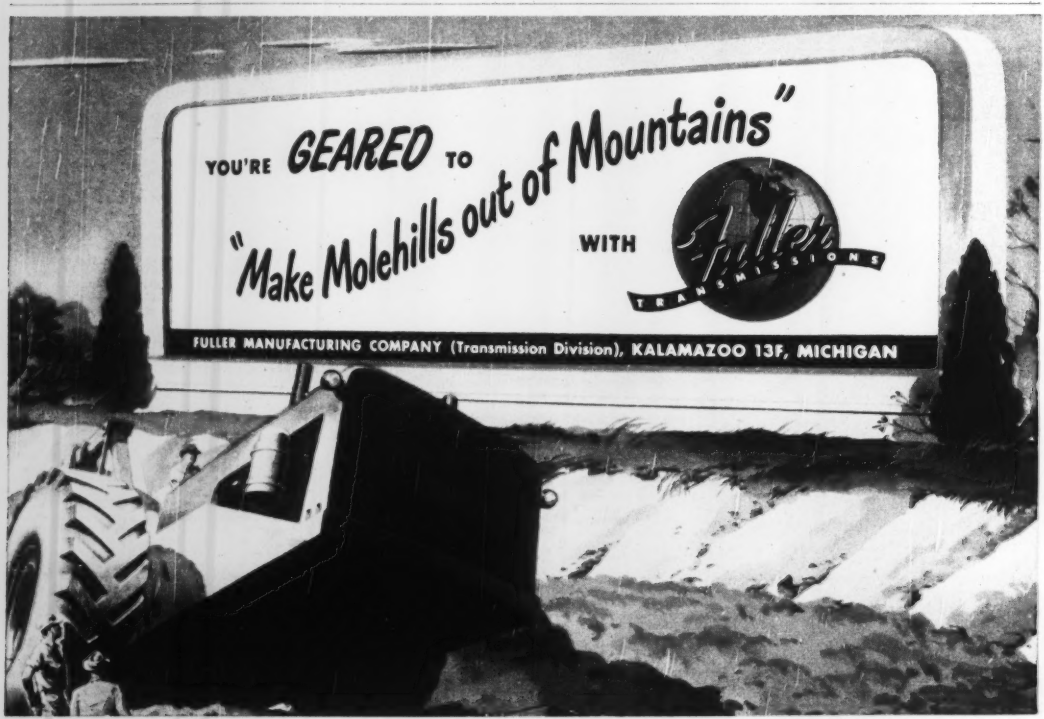
Tenn., Knoxville—AIRPORT—City, City Hall, Oct. 17, administration bldg. addns., alterations at McGhee-Tyson Airport from Emory & Richards, 2117 N. Central St., **$353,355**. CD 10/9.

CONTRACTS AWARDED

Pa., Phila.—FIXED BASE OPERATIONS BLDG.—Dpt. P. Wks., City Hall Annex, fixed base operations bldg., Phila. International Airport, to K. Litvin & Son, 1620 Pine St., **$170,204**. A. Zane Hoffman, c/o owner, ch. engr. CD 2/19/46.

▲ † **Alaska, Fairbanks**—BARRACKS—U. S. Eng. (APO 942, c/o PM, Seattle, Wash.) Anchorage, 750-man barracks at Eielson Air Force Base, to Chris Berg,

(Continued on page 102)

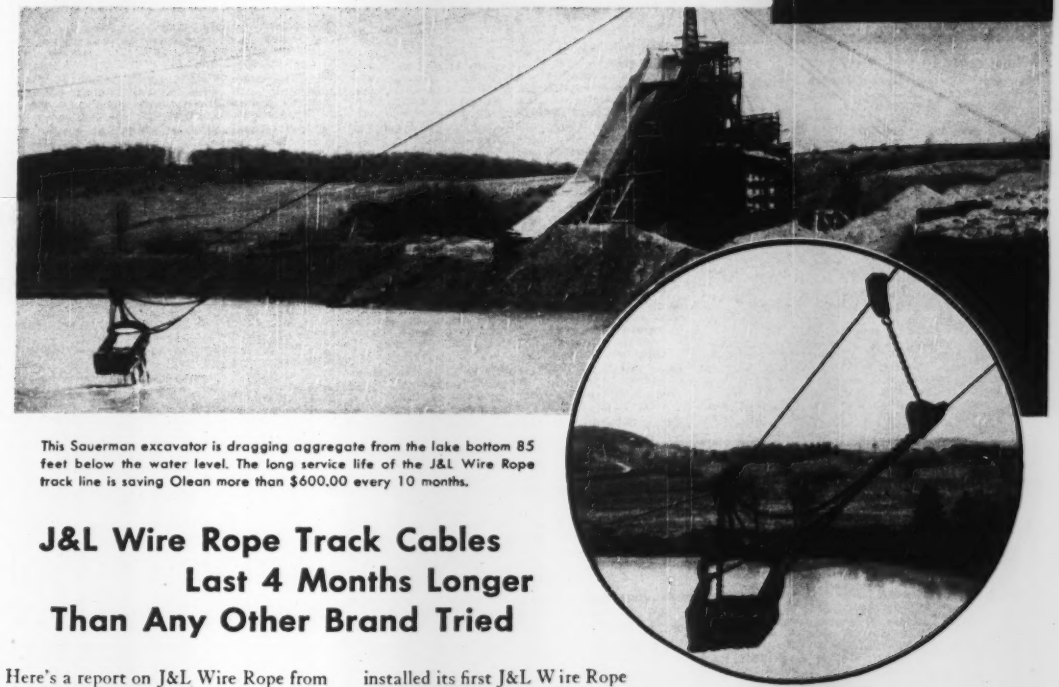


Olean Gravel Corporation

Saves $600.00

Per J&L Wire Rope Installation

J&L STEEL



This Sauerman excavator is dragging aggregate from the lake bottom 85 feet below the water level. The long service life of the J&L Wire Rope track line is saving Olean more than $600.00 every 10 months.

J&L Wire Rope Track Cables Last 4 Months Longer Than Any Other Brand Tried

Here's a report on J&L Wire Rope from the Olean Gravel Co. It's a story about results—results that can be measured in cash.

Olean Gravel Corporation reports that by using J&L Wire Rope for track cable on a Sauerman excavator more than $600.00 are saved per installation.

Olean has been dredging gravel from a glacial delta deposit near Machias, New York, for more than twenty years. Water level was reached long ago and at present the aggregate is being dragged to a depth of 85 feet below water level. The total load on the track cable is over six tons and it is under stress at a sharp angle when the bucket is on the lake bottom. It's a tough application.

Olean has tried four brands of wire rope. Average service life was six months. Then on June 27, 1947 the company installed its first J&L Wire Rope track cable. It wasn't till 11 operation months later that a second J&L wire rope had to be installed. This time the service record showed 9 operating months.

The cost of a track cable on this rig runs to more than $900.00. Since the J&L Wire Ropes lasted an average of 4 months longer than the best brand previously used, Olean saved more than $600.00 on each J&L wire rope installed.

In addition costs for labor and lost production when changing cables have been reduced 40% because of J&L Wire Rope's 4 months longer service life.

It's no wonder that Olean Gravel Corporation has standardized on J&L Wire Rope for tension lines, inhaul cable and various applications on clam shells at the operating site.

If J&L Wire Rope can save money for Olean Gravel Corporation, the chances are it can do a job for you, too. Why not write in for a copy of our handbook, "Wire Rope is a Machine"? It's written for the operating man and gives profitable information on J&L Wire Rope and its applications. Better still contact your nearest J&L Wire Rope representative.

Jones & Laughlin Steel Corporation
428 Jones & Laughlin Building
Pittsburgh 30, Pa.

I am interested in cutting maintenance costs with J&L Wire Rope.

Please send me a free copy of your handbook, "Wire Rope is a Machine."

Name_____

Company_____

Address_____

JONES & LAUGHLIN STEEL CORPORATION

From its own raw materials, **J&L** *manufactures a full line of carbon steel products, as well as certain products in* OTISCOLOY *and* JALLOY *(hi-tensile steels).*

PRINCIPAL PRODUCTS: HOT ROLLED AND COLD FINISHED BARS AND SHAPES • STRUCTURAL SHAPES • HOT AND COLD ROLLED STRIP AND SHEETS • TUBULAR, WIRE AND TIN MILL PRODUCTS • "PRECISIONBILT" WIRE ROPE • COAL CHEMICALS

(Continued from page 100)

Inc., 2730 Westlake Ave. N., Seattle, Wash., $1,301,175. Est. $1,443,919. CD 8/14, under LB.

LATIN AMERICA

Chili, Tierra del Fuego—Corporacion de Fomento de la Produccion de Chili, Concepcion, awarded contract preliminary processing plant to Hudson Engineering Corp., 2711 Danville St., Houston, Tex., U. S. A. Approx. $6,500,000. CD 5/29/47.

Mexico, Santa Lucia—Mexican Govt., Sria. de D.N., Mexico City, awarded contract runways, Military Air Base No. 1, to Cia Pavimentos, S.A. (Ing. Antonio Trespalacios, mgr.), Rhin, 59, Mexico City. Approx. $500,000. Awarded 10/21. CD 5/24/49.

PUBLIC BUILDINGS

BIDS ASKED

Mo., Gardenville (St. Louis 23, P.O.)—SCHOOL—B. A. 11/7—Bayless Consolidated School Dist., Hugo E. Beck supt., 4530 Weber Rd., St. Louis, Zone 23, 2 story, bsmnt., 60x120 ft., brick, rein.-con. high school addn. Marcel Boulicault, 922 Ambassador Bldg., St. Louis, Zone 1, archt. Bids 8/29 rejected. CD 9/26.

† **Fla., Miami**—CLASSROOMS—B.A. 11/9—U. S. Navy, Charleston Naval Base, Charleston, S. C., addnl. classrooms and electric and ventilating equip. and service in addnl. space, NOY 22967, Spec. 25416. Plans deposit $5.

Mass., Westboro—SCHOOL—B.A. 11/9—Town of Westboro, School Dpt., 1 and 2 story brick school, $360,000. Plans deposit $50, Kilham, Hopkins, Greeley & Brodie, 9 Arlington St., Boston, archts. CD 4/19.

▲ **N. Y., Auburn**—APARTMENT—B.A. 11/9—Auburn Municipal Housing Auth., Auburn, 118 unit garden apartment, Thornton Ave. and Garrows St. $1,367,458. Bids 10/3 rejected. CD 10/10, under LB.

Pa., Mercer—SCHOOL—B.A. 11/9—State Public School Building Auth., 1400 N. Cameron St., Harrisburg, general constr., heating, plumbing, electrical work for construction of elementary school for the School Dist. of Wester Mercer Twp. Plans deposit $25 general, $15 each others. Kling & Frost, 661 Wick Ave., Youngstown 0., archts. W. W. Behrens, c/o owner, ch. engr. CD 12/30/48.

Pa., Woodville—LAUNDRY—B.A. 11/9—General State Auth., 18 and Herr Sts., Harrisburg, general contract, ventilating, electrical work laundry addn. at Woodville State Hospital. $85,000. Plans deposit $750 each. Thomas B. Garman, 701 Washington Rd., Pittsburgh, Zone 16, archt. A. F. Jones, c/o owner, ch. engr.

▲ **Tex., Corpus Christi**—HOSPITAL—B.A. 11/9—Driscoll Foundation Children's Charity Hospital, c/o Dr. I. W. Keys, Driscoll Bldg., 5 story 115 bed children's hospital, $2,500,000. Plans deposit $50. C. H. Page & Son, 305 W. 11 St., Austin, archts. Eggers & Higgins, 542 5 Ave., New York, N. Y., engrs. CD 10/15/48.

▲ **Tex., Terrell**—DORMITORIES—B.A. 11/9—Bd. for Texas State Hospitals & Special Schools, 45 and Lamar Sts., Austin, Wing F, masonry womens dormitory, $500,000; Wing E, mens dormitory, $610,000. Plans deposit $50 each. Tatum & Quade, 2812 Fairmont St., Dallas, archts. Walter C. Moore, Jr., 2504 Woolridge Dr., Austin, superv. archt. CD 9/7.

Calif., Newhall—AUDITORIUM and MUSIC—B.A. 11/10—William S. Hart Union High School Dist., 1405 Newhall Ave., 16,375 sq. ft. auditorium and music bldg. $450,000. Plans deposit $25. Jerome C. DeHetre, 414 N. Burris Aves., Compton, archt. Bids 10/6 rejected. CD 9/27.

Ill., Urbana—SCHOOL, etc.—B.A. 11/10—School Bd., Urbana Junior High School and gymnasium, $800,000.

Ky., Barbourville—SCHOOL—B.A. 11/10—Knox Co. Bd. Educ., Barbourville, Knox Central School. Plans deposit $50. D. E. Perkins, Harlan, archts. CD 8/21.

Mich., Ionia—HOSPITAL—B.A. 11/10—State, A. N. Langius, dir. State Bldg. Dpt., Lansing, 3 story, brick, steel, 100,000 cu. ft. tuberculosis bldg. for women at Ionia State Hospital. H. E. Beyster Corp., Industrial Bank Bldg., Detroit, Zone 2, archts. CD 8/25.

Mont., Sunburst—SCHOOL—B.A. 11/10—Sunburst High School Dist., Sunburst, high school, $300,000. A. F. Bordeleau, 410 8 St. N., Great Falls, archt. CD 10/4.

N. C., Charlotte—NATURAL SCIENCE—B.A. 11/10—Bd. School Comrs., J. M. Dunpal, bus. mgr., City Hall, natural science bldg. at Myers Park School, chemistry science bldg., biology bldg., greenhouse and uncovered walkways connected to present Language Arts Bldg. Plans deposit $15 general constr. $10 each others. J. N. Pease & Co., Inc., 1114½ E. 5 St., engrs. and archt. CD 10/9.

Ont., Toronto—HOUSING—B.A. 11/13—Housing Auth. of City of Toronto, City Hall, two family units, 4 story, 131x219 ft., brick, steel, H-shaped Regent Park North Housing, $500,000. Plans deposit $50. J. E. Hoare, Jr. 481 Eglinton Ave. W., archt. CD 1/28/48.

† **California**—POWER PLANT GENERATOR—B.A. 11/14—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, installing generator for Folsom Power Plant, Central Valley Proj., at Folsom Dam, approx. 21½ mi. from Folsom. Spec. DC-3204.

▲ **Md., Bethesda**—BUILDINGS—B.A. 11/14—Public Bldgs. Service, General Service Admin. Bldg., Wash. 25, D. C., 4 story, concrete, brick shops, laundry and storage bldg. with concrete tile fdn. on 150x460 ft. ground area, National Institute of Health, $2,000,000-$4,000,000. CD 11/2/48.

Tex., Stephenville—PHYSICAL EDUCATION—B. A. 11/14—John Tarlton State College, Stephenville, women's physical educ. $250,000. Plans deposit $50. Wyatt C. Hedrick, 1005 First Natl. Bank Bldg., Fort Worth, archt. CD 9/30/49.

Calif., Stockton—SCHOOL—B.A. 11/15—Montezuma School Dist., Stockton, frame, stucco Montezuma School, near here. $400,000. Plans deposit $50. Mayo & Johnson, 306 Exchange Bldg., Stockton, archts. CD 9/11.

Tex., College Station—POULTRY—B.A. 11/15—A & M College of Texas, College Station, poultry bldg. $250,000. Carleton W. Adams, 118 College Admin. Bldg., A & M System archt.

Ill., Carpentersville—SCHOOL—Bids Asked—Community School 300, 1 story, steel, brick, concrete school, $400,000. Bradley & Bradley, 226 S. Main St., Rockford, archts.

LOW BIDDERS

Calif., Berkeley—SCHOOL—Berkeley Bd. Educ., Rose and Walnut Sts., Oct. 19, 3 story, rein.-con. Burbank Junior High School with attached steel frame, concrete auditorium, from Herbert E. Ellis, P. O. Box 146, Sta. A, $898,000. CD 9/27.

Calif., Fresno—SCHOOL—American Union Elementary School Dist., West and Springfield Aves., Oct. 16, frame, stucco school, near here, from Harris Constr. Co., 264 Palm Ave., $430,985. Wm. Hastrup, Anglo Bank Bldg., archt.

Calif., Long Beach—SCHOOL—City School Dist., 715 Locust Ave., Oct. 19, rein.-con. gymnasium and frame, stucco classrooms at Rogers Junior High School, from W. C. Smith, Inc., 2119 Pacific Ave., $424,000. Est. $415,000. CD 10/5.

Calif., Needles and Essex—SCHOOLS—Needles Elementary School Dist., Needles, 3 schools, from J. E. Burrell & Sons, 522 San Francisco Ave., Long Beach, $636,200. Est. $574,835. CD 2/17.

Conn., Middletown—LAUNDRY—State, R. S. Thatcher, comptroller, State Capitol, Hartford, laundry and service bldg., State Hospital, B/A 1-7-0, from H. Wales Lines Co., 124 State St., Meriden, $669,956. CD 10/11.

Conn., New Britain—HALL—State, R. S. Thatcher, comptroller, State Capitol, Hartford, rejected bids. Sept. 26, brick, steel, concrete Henry Barnard Hall, B/A-4-64, L. B. $961,711. CD 10/11, under LB.

Del., Wilmington—SCHOOL—Richardson Park School Dist., Richardson Park, Wilmington, Oct. 18, school, from Rupert Constr. Co., 3400 Lancaster Ave. $409,000. CD 10/4.

▲ **Fla., Tallahassee**—DORMITORIES—State Bd. Control, Tallahassee, Oct. 19, three 40-man dormitories, from Paul Smith Constr. Co., 920 Rome Ave., Tampa, Zone 1, $365,300; 8 story 346-women dormitory at Florida State University, from J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C., $750,000. CD 9/22.

▲ **Fla., Tallahassee**—DORMITORIES, etc.—Bd. Control, Tallahassee, Oct. 19, 11 story mens dormitory, Florida State University, from Beers Constr. Co., 70 Ellis St. N. E., Atlanta, Ga., $1,429,000; three 40-unit mens dormitories from Jack Culpepper Constr. Co., 133 E. Park Ave., Tallahassee, $297,800. CD 9/22.

▲ **Ga., Americus**—HOSPITAL—City and Sumter Co., Oct. 19, hospital, from W. K. Upchurch Constr. Co., Farm Security Bldg., Montgomery, Ala., $1,117,949. CD 9/25.

▲† **Ill., Lemont**—BIOLOGY—U. S. Atomic Energy Comn., Argonne National Laboratory, Downers Grove, 3 story, bsmnt. biology bldg., from S. N. Nielson Co., 1059 Augusta Blvd., Chicago, Zone 22, $3,999,000. CD 8/23.

▲ **Md., Rockville**—OFFICE—Montgomery Co., Oct. 20, 4 story, brick, rein.-con. Montgomery Co. Office and 3 story health wing, Jefferson and S. Perry Sts., from Byrne Organization, 2607 Connecticut Ave. N. W., Wash., D. C., $1,154,000. CD 9/27.

▲ **Mass., Brockton**—SCHOOL—City, City Hall, Oct. 11, 2 story, brick, steel West Junior High School, West St., from Platt Constr. Co., Inc., 99 First St., Cambridge, Item 1 $764,479, Item 2 $602,521, total $1,367,000. CD 10/2.

▲ **Mass., Falmouth**—SCHOOL—Town, Selectmen's Office, Town Hall, Oct. 18, 1 and 3 story, brick, steel Junior-Senior High School, Chute Estate, from Platt Constr. Co., Inc., 99 First St., Cambridge, $1,343,000. CD 9/29.

Mich., Traverse City—PLANT—State, A. N. Langius, dir. State Bldg. Dpt., State Office Bldg., Lansing, Oct. 18, brick, steel, concrete cold storage plant and service bldg. at Traverse City State Hospital, from Christman Co., 408 Kalamazoo Plaza, Lansing, $536,774. CD 10/6.

▲ **Minn., St. Paul**—HOUSING—St. Paul Housing & Development Auth., I. Karon, exec. dir., E. 702 First National Bank Bldg., 201 3/4 three hundred and twenty units, 68 two story, bsmnt., Franklin Roosevelt Housing, Maryland and Hazelwood Aves., from Hagstrom Constr. Co., 1567 Selby Ave., $3,194,000. CD 9/27.

Mont., Helena—DWELLING—Helena Housing Auth., Oct. 17, sixty dwelling units, from Carson Constr. Co., Box 1153, $819,707. CD 9/20.

N. J., Florence—SCHOOL—Bd. Educ., Oct. 23, general contract Senior High School, Cedar and Pine Sts., from John McShain, Inc., 632 S. Olden Ave., Trenton, $457,200. CD 10/5.

▲ **N. Y., New York**—HOSPITAL—Dpt. P. Wks., Municipal Bldg., Zone 7, Oct. 19, general contract tuberculosis hospital, Pelham Parkway South and Eastchester Rd., from Gerace & Castagna, Inc., 155-10 Jamaica Ave., Jamaica, $10,540,940***plumbing, from Joseph F. Egan, 3013 Grand Concourse, Zone 58, $1,437,800 ***heating and ventilating from Heating Maintenance Corp. of New York, 220 E. 138 St., Zone 51, $1,669,455***electrical work, from E. J. Electric Installation Co. & Plymouth Elec. Constr. Co., Inc., 21 E. 40 St., Zone 17, $1,436,000. CD 10/4.

▲ **N. C., Chapel Hill**—NURSES HOME, etc.—University of North Carolina, W. D. Carmichael, Jr., Controller, Gerrard Hall, Oct. 19, general contract nurses home and interne quarters, from J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, $1,882,800. CD 9/18.

▲ **N. C., Fayetteville**—HOUSING—Fayetteville Housing Auth., Fayetteville, Oct. 17, housing, Proj. NC 9-3, from H. L. Cobie Constr. Co., Greensboro, $1,246,800. Est. $1,200,000. CD 9/28.

O., Maple Heights—SCHOOL—Bd. Educ., Lee and Broadway, east wing addn. to high school, from National Concrete Fireproofing Co., Terminal Tower, Cleveland, $672,900. CD 2/23.

O., Youngstown—HOSPITAL—Dpt. P. Wks., S. O. Linzell, Dir., Columbus, general contract Youngstown Receiving Hospital addn., from Felik Pesa & Sons Co., 745 Andrews Ave., $594,493. CD 9/22.

▲ **Tex., Brownsville**—DWELLINGS—Brownsville Housing Auth., Brownsville, cancelled bids to have been opened Nov. 7 128 brick dwelling units, concrete slab fdn. admin. bldg., site imprvs. $1,100,000. CD 10/10.

▲**B. C., Vancouver**—HOSPITAL—Province of British Columbia, Parliament Bldgs., Victoria, Oct. 18, rein.-con. tuberculosis hospital with all wards to be in 1 story bldg. and administration blocks being 2 story structure, from Smith & Bros. & Wilson Ltd., 1267 Richards St., $1,422,870. CD 9/12.

CONTRACTS AWARDED

▲ **Conn., Bridgeport**—HOUSING—City of Bridgeport Housing Auth., Harold C. Poole, dir., 252 Hallett St., Charles F. Greene Houses, to Frouge Constr. Co., 74 Goodsell St., $2,943,000. Bids 10/13, awarded 10/16. CD 10/20, under LB.

▲ **Fla., Tampa**—HOUSING—Tampa Housing Auth., c/o Franklin O. Adams, archt., 404 Franklin St., Ponce de Leon Court Housing addn. incl. 380 units, to Fred Howland, Inc., 1451 N. W. 20 St., Miami. Approx. $3,000,000. Bids 10/18. CD 10/9.

▲ **Ind., Newport**—PLANT—Atomic Energy Comn., 1901 Constitution Ave. N. W., Wash., D. C., plant, near here, to Girdler Corp., 224 E. Broadway, Louisville, 1, Ky., $5,000,000. CD 6/13.

Md., Upper Marlboro—SCHOOL—Prince Georges Co. Bd. Educ., Court House, brick, limestone, concrete, cinder block, steel Surrattsville Junior Senior High School addn., Surrattsville, to B. & J. Constr. Co., 3432 Connecticut Ave. N. W., Wash., D. C., $565,318. CD 10/17, under LB.

Mass., Manchester—SCHOOL—Town of Manchester, School Bldg., Comm., 1 and 2 story, bsmnt., school, to Walsh Constr. Co., Inc., 119 Webb St., Salem, $782,682. Awarded 10/17. CD 10/2, under LB.

▲† **Michigan**—BUILDINGS—U. S. Eng., 520 Merchandise Mart, Chicago, 54, Ill., bldgs., to W. J. Lazynski, Inc., 906 E. Center St., Milwaukee, Wis., $1,500,000. Awarded 10/11.

Mich., Portage—SCHOOLS—Portage Twp., Bd. Educ., 2 brick steel, Milham Rd. and Pershing Schools, to Herlihy Mid-Continent Co., Comstock, $564,961. Bids 9/19. CD 9/5.

Mo., Marville—DORMITORY—State Purchase Dpt., Jefferson City, annex to women's and men's dormitories and student service bldg. to Thomas Constr. Co., Schneider Bldg., St. Joseph, $525,323. Bids 10/10, Walter Boschen, 512½ Francis St., St. Joseph, archt. CD 2/5/46.

Mont., Lewiston—HOME—State, Bd. Examiners, Helena, general contract 1 story, X-shaped state home for aged, to Dudley Constr. Co., 1001 Ninth Ave. N., Great Falls, $598,713. Awarded 10/17. CD 9/27.

† **N. M., Los Alamos**—BUILDINGS—U. S. Atomic Energy Comn., Los Alamos, concrete type buildings, Group 142-TA-15, Proj. E. Inv. No. 291-51-24, to Robert E. McKee, Inc., Box 562, El Paso, Tex., $593,300 Bids 10/10. CD 10/23, under LB.

▲ **O., Columbus**—SCHOOL—Comm. for Schools for Blind & Deaf, c/o Ohio Welfare Dpt., Columbus, general contract School for Deaf to Robert W. Setterlin & Co., 1030 W. 3 Ave., $2,015,900. Bids 9/21, awarded 10/19. CD 9/28, under LB.

O., Fairborn—SCHOOL—Bd. Educ., Fairborn, general contract school in northeast part of town, to Seaver & Williams, Washington Court House, $480,732. Walker, Norwick & Templin, American Bldg., Dayton, archts.

▲ **Pa., Mayview**—PATIENTS—General State Auth., 18 and Herr Sts., Harrisburg, general contract female disturbed and semi-disturbed patients bldg. at Mayview State Hospital, to Allegheny Building Co., 849 Bingham St., Pittsburgh, $1,583,800. Bids 10/11, awarded 10/20. CD 10/16, under LB.

R. I., Cranston—SCHOOL—City, C. W. Bosworth, supt., Park Ave., school, Auburn Sect., Eden Park, to E. Turgeon Constr. Co., Inc., 42 Weybosset St., Providence, $688,347. Bids 9/27, CD 10/4, under LB.

▲ **Tex., Denton**—DORMITORIES—North Texas State College, Denton, 3 story men's dormitory and 3

story women's dormitory, to Nathan Wohlfeld, Box 7084, Dallas, $1,196,575. Bids 10/17. CD 10/24, under LB.

† Va., Quantico—BARRACKS, etc.—U. S. Eng., First and Douglas Sts., N. W., Wash. 25, D. C., barracks, mess hall, roads and walks, near here, to Blake Constr. Co., 33 E. St. S. W., Wash., D. C., $714,248. Bids 10/10, awarded 10/16. CD 10/17, under LB.

Wis., Appleton—SCHOOL—Bd. Educ., Appleton, general contract Franklin School, to Hoffman Co., Inc., 1519 N. Oneida St., $829,000. Bids 9/15, awarded 10/11. CD 9/26, under LB.

Wis., Eau Claire—LABORATORY—Bd. Regents Normal Schools, Madison, general contract laboratory at State Teachers College, to L. G. Arnold, Inc., N. Dewey and Gallaway Sts., $998,300. Bids 10/4. CD 10/10, under LB.

† Alaska, Fort Richardson—ENLISTED MEN'S SERVICE CLUB, etc.—U. S. Eng., (APO 942, c/o PM, Seattle, Wash.) Anchorage, enlisted men's service club bldg. and 2 bachelor officers' quarters, to Morrison-Knudsen Co., Inc., and Peter Kiewit Sons Co., 1300 Aloha St., Seattle, Wash., $520,000. Bids 9/7. CD 9/13, under LB.

▲ B. C., Vancouver—NURSES HOME—Vancouver General Hospital, 10 Ave. and Heather St., second and third units nurses' home, each wing to be 8 story, rein.-con., to Northern Constr. Co. & J. W. Stewart Ltd., 1304 Hornby St., $1,329,500. Bids 1013, awarded 10/17. CD 9/28.

▲ Ont., Ottawa—OFFICE—Central Mortgage & Housing Corp., No. 4 Temp. Bldg., Lyon St., 3 story, bsmnt., 175x384 ft., rein.-con. brick head office bldg., Montreal Rd., to Louis Donolo, Inc., 8320 St. Lawrence Blvd., Montreal, Que. Approx. $2,000,000.

Ont., Ottawa—POWER HOUSE—Dpt. P. Wks., Hunter Bldg., power house at Tunney's Pasture Development, Parkdale Ave., to Thomas Fuller Constr. Ltd., 33 Mann Ave., $616,500. Bids 10/11.

COMMERCIAL BUILDINGS

BIDS ASKED

Wash., Longview—LODGE—B. A. 11/7—Elks Lodge No. 1514, Longview, 2 story, 90x151 ft., rein.-con. lodge, $250,000. L. B. Rice, Myklebust Bldg., archt.

Pa., Phila.—SYNAGOGUE—B.A. 11/8—Harry Sternfeld, archt., 1411 Walnut St., synagogue for Germantown Jewish Center, Lincoln Dr. and Ellett St. Approx. $250,000. Charles D. Hickman, 112 S. 16 St., engr. Bids 9/7 rejected. CD 9/21, under LB.

N. J., Princeton—SCHOOL—B.A. 11/10—Supt. Grounds & Bldgs., Princeton University, Princeton, Woodrow Wilson School of Public and International Affairs, Washington Rd. and Prospect St. $500,000. Voorhees, Walker, Foley & Smith, 101 Park Ave., New York, 17, N. Y., archts. CD 3/17.

Ind., Gary—APARTMENT—Bids Asked—Du Sable Apartments, Inc., 21 and Virginia Sts., 1 and 2 story, 80 unit apartment. $600,000. Paul Cripe, Lemcke Bldg., Indianapolis, archt.

▲ Ind., Gary—APARTMENT—Bids Asked—Major Apartments, Inc., Taft and Village Sts., 1 and 2 story, 140 units apartment. $1,000,000. Paul Cripe, Lemcke Bldg., Indianapolis, archts.

Mich., Benton Harbor—SCHOOL and CHURCH—Bids Asked—Trinity Evangelical Lutheran Parish, Benton Harbor, 1 story, bsmnt., brick, stone school and church, $260,000, Joseph C. Llewellyn, 38 S. Dearborn St., Chicago, Ill., archt.

Pa., Phila.—AUDITORIUM—Bids Asked—Sydney Jelinek, archt., 924 Walnut St., auditorium and chapel wing addns. for Congregation Emanu- El, York Rd. and Stenton Ave. $250,000. CD 7/21.

▲ Tex., Dallas—APARTMENTS—Bids Asked—Dan C. Williams & S. R. Frank, Republic Bank Bldg., 15 story, 255 apartment units, 2600 blk. Turtle Creek, $1,147,500; 9 story, 88 apartment units, Turtle Creek and Lemmon St., $480,000. Harwood K. Smith & Joseph M. Mills, Mercantile Bank Bldg., archts. CD 9/26.

Tex., Dallas — APARTMENTS — Bids Asked — Dan Williams & Assoc., c/o Andrews Bldg., 212 unit apartment. $954,000. Harwood K. Smith & Joseph M. Mills, Mercantile Bank Bldg., archts. CD 9/26.

SOON LETS CONTRACT

Del., Elsmere (Wilmington P.O.) — SCHOOL — Gleeson & Mulrooney, archts., Fox Bldg., Phila., Pa., soon lets contract, school for Corpus Christi Roman Catholic Church, 912 New Rd. $700,000. CD 9/21.

LOW BIDDERS

Ind., Evansville—HOSPITAL—Deaconess Hospital, Albert Hahn, administrator, 600 Mary St., 55 bed, 4 story, brick hospital, from Bauer Bros., 522 Market St., $635,000, Est. $500,000. CD 7/14.

Pa., Bryn Mawr—HOSPITAL—Bryn Mawr Hospital, Bryn Mawr, Oct. 10, general contract hospital addn. and nurses dormitory, from Joseph R. Farrell, Inc., 4424 Market St., Phila., $574,560. CD 9/14.

▲ Tex., Dallas—OFFICE—Gibraltar Insurance Co., 417 N. Ervay St., Oct. 18, 20 story, bsmnt. office, from J. W. Bateson Const. Co., Inc., Irwin-Keasler Bldg., $4,183,000. Est. $3,500,000. CD 9/6.

CONTRACTS AWARDED

Calif., Alhambra—APARTMENT HOUSES—Marengo Place, Inc., 8738 Ramsgate Ave., Los Angeles, seventy 1 and 2 story, frame, stucco apartments, Bushnell Ave., to Bedford Investment Co., 8738 Ramsgate Ave., Los Angeles, $400,000. Davie I. Elrod, 6314½ San Vicente Blvd., archt.

Calif., Covina—DWELLINGS—H & N Developers, 5630 Vineland Ave., Los Angeles, 68 dwellings in West Covina District. Owner builds, $496,000. Builders Drafting Service, 5628 Vineland Ave., Los Angeles, archts.

Calif., El Monte—DWELLINGS—Los Angeles Development Co., 2357 Washington Blvd., Los Angeles, 62 stucco dwellings, Halifax Rd., Frankmont, Glenfair and Marsen Sts. Owner builds, $422,670.

Calif., Inglewood—DWELLINGS—Ainsworth Manor, Inc., 3440 E. 14 St., Los Angeles, 86 stucco dwellings in Tract 14529, to Mac-Lowmen, 3440 E. 14 St., Los Angeles, $562,800. J. Lowell Henderson, 3440 E. 14 St., Los Angeles, archt.

Calif., Los Angeles—APARTMENT—Viking-Wilshire Co., 9645 Santa Monica Blvd., Beverly Hills, 6 story, concrete steel apartment, to Viking Constr. Co., 9645 Santa Monica Blvd., Beverly Hills, Approx. $470,450. Hugh Gibbs, 441 E. 1 St., Long Beach, archt.

Calif., Pasadena—PARISH—Pasadena Presbyterian Church, 585 E. Colorado Blvd., 3 story, rein.-con. parish bldg., to H. M. Hodges, 5531 Venice Blvd., Los Angeles, $597,000, Est. $600,000. Bids 6/1, awarded 10/10. CD 5/26.

Calif., Rivera—DWELLINGS—Wilrose Corp., 945 N. LaCienega St., Los Angeles, 128 stucco dwellings, Summer, Roseton, Jersey and Gard Aves., Elkhurst and Joslin, Sts., Orr and Day Rds. Owner builds, $860,400. Frank Green, 1515 E. Chevy Chase Blvd., Glendale, archt.

▲ Calif., Rosemead—DWELLINGS—Rosemead Gardens, 6307 Wilshire Blvd., Los Angeles, 281 stucco dwellings in Tract 16955. Owner builds, $2,041,300. Martin Stern Jr., 8912 Burton Way, Beverly Hills, archt.

Calif., San Jose — RESIDENCES — Kaiser Community Homes, 5555 W. Manchester Ave., Los Angeles, 92 residences, Monroe, Woodland and Cory Aves. and 92 residences, Kenwood Ave. Owner builds. $717,000 each.

Ia., Decorah — ADMINISTRATION — Luther College, Decorah administration bldg., to R. A. Coffeen & Co., Decorah, $400,000. Charles Altfillisch, Decorah, archt. CD 10/23.

▲ La., Barksdale Field (br. Shreveport)—HOUSING—Dpt. Air Force, Barksdale Field, construct, finance, and manage 692 apartment housing units at Barksdale Air Force Base, to Daniel Constr. Co., 822 7 Ave. S, Birmingham, Ala., $5,560,000.

▲ Mass., Cambridge—LABORATORY—Massachusetts Institute of Technology, 77 Massachusetts Ave., Dorrance biology and food laboratory, to Sawyer Constr. Co., 31 St. James St., Boston, $2,000,000. CD 7/5.

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DIVISION, MAXON CONSTRUCTION COMPANY, INC.
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Please send Dumpcrete information.
Name_____
Firm_____
Street_____ City_____

▲ Mo., St. Louis—BANK—First National Bank in St. Louis, William A. McDonnell, pres., Broadway and Locust St., Zone 1, 5 story, bsmnt., 44x96 ft., rein.-con., brick stone, steel bank addn. and modernization 6 story, bsmnt. present bldg., to H. B. Deal & Co., Inc., 5517 Manchester Ave., Zone 10, approx. $5,000,000, Bank Building & Equipment Corp. of America, 906 Sidney St., Zone 4, archts. Sverdrup & Parcel, Inc., Syndicate Trust Bldg., 915 Olive St., Zone 1, consult. archts. and engrs. CD 1/3.

O., Columbus—HOUSING—H. E. Lurcomb, 780 Oakland Park Ave., 68 one and one half story frame dwellings, Oakland Park Ave., Kenworth and Karl Rds., to Lurcomb Builders, Inc., 780 Oakland Park. Approx. $544,000.

▲ Pa., Havertown—RESIDENCES—Roy Williams, Huntingdon Valley, residential development, Paddock Rd., separate contracts. Approx. $1,890,000.

Pa., Phila.—CHAPEL, etc.—Eastern Baptist Theological Seminary, City Line and Lancaster Ave., Memorial Chapel and Music Hall, to R. M. Shoemaker, 1619 Sansom St., $322,636. Bids 10/10. CD 9/26.

Pa., Phila.—RESIDENCES—Mary Jane Homes, Inc., c/o Mr. Rosenfeld, Widener Bldg., residential development, Somerton Sect., separate contracts. Approx. $790,000.

Pa., Phila.—RESIDENCES—Owner, c/o general contractor, residential development, Northeast Sect. to Master Masons Const. Co., 1619 W. Thompson St., $900,000.

Pa., Phila.—RESIDENCES—Pelco Builders & Carpenters, 1521 Pine St., residential development, separate contracts. Approx. $500,000.

Pa., Phila.—RESIDENCES—Manfield Homes, Inc., 7340 York Rd., residential development, Dorset St., separate contracts. Approx. $567,000. J. Ethan Fieldstein, 1325 Walnut St., archt.

▲ Pa., Phila.—RESIDENCES—Paul Trimboli, 951 E. Godfrey Ave., residential development, 29 and 28 Sts., separate contracts. Approx. $1,000,000.

Tenn., Memphis—HOMES—Prescott Co., c/o West Livaudais, archt., Columbian Mutual Tower, 50 homes. Owner builds. Approx. $400,000.

Tex., Dallas—CHURCH—First Baptist Church, 606 N. Ervay St., church, to Inne Haviman Constr. Co., Inc., 226 N. Beckley St., $500,000. CD 10/23.

Tex., Houston—DWELLINGS—Meadowbrook Building Co., 7801 Howard Dr., 60 dwellings, across from Freeway from Meadowbrook area. Owner builds. $540,000. CD 11/14/49.

▲ Tex., Houston—HOSPITAL—Memorial Hospital, 602 Lamar St., Memorial Hospital Sect., to Thad Dederick Constr. Co., 2914 Quenby St., $1,879,000. Bids 10/3. CD 9/13.

Tex., Houston—SANCTUARY, etc.—St. Lukes Methodist Church, 3350 Westheimer Rd., sanctuary and educational to Fisher Constr. Co., 4711 Greeley St., $510,000. Bids 9/8. CD 9/20, under LB.

Tex., Houston—DWELLINGS—Hugh Wilkin, c/o Wilkin Lumber Co., 2302 Danville St., 50 high-type dwellings. Purchase and Hire. $565,000. CD 9/29.

Va., Richmond—HOSPITAL—Richmond Eye Hospital, Richmond hospital, to Doyle & Russell, Central Natl. Bank Bldg., Third and Broad Sts., $604,330. Bids 9/7. CD 9/18, under LB.

▲ Ont., Sarnia—HOUSES—Elliot Constr. Co., Ltd., 7 Hughson St. S., Hamilton, 135 more or less houses in Meadowlea sub-division, own forces, $1,240,000.

Sask., Saskatoon—DWELLINGS—A. A. Myers Constr. Co., Saskatoon, 63 dwellings in Nutana Zone. Owner builds. $504,000.

INDUSTRIAL BUILDINGS

BIDS ASKED

Fla., Miami—PLANT—Bids Asked—Dupont Heights Industrial Center, c/o Alfred Oboler, engr., 4250 Chase Ave., Miami Beach, 170x145 ft. mfg. plant.

Ill., Chicago—FACTORY—Bids Asked—Berns Mfg. Co., 3040 N. Rockwell St., Zone 47, 1 story, 22,000 sq. ft., steel, concrete brick factory, $150,000. A. J. Greenberg, 165 E. Erie St., Zone 11, archts.

Ill., Chicago—FACTORY—Bids Asked—Edson, Inc., 2750 S. Sacramento Ave., 10,000 sq. ft. factory addn. $85,000. Edward P. Steinborn, 176 W. Adams St., Zone 3, archt.

Ill., Chicago—WAREHOUSE—Bids Asked—Progressive Food Stores, Inc., Kilbourn and 31 Sts., Zone 23, 1 story, 42,000 sq. ft., steel, brick, concrete warehouse, $275,000. Wm. P. Whitney, 3325 Lincoln St., Zone 18, archt.

▲ Neb., Omaha—PLANT—Bids Asked—At office Vern E. Alden Co., designing and supervising engr., 120 S. La Salle St., Chicago, Ill., branch plant, 4 and Pierce Sts., for Quaker Oats Co., 141 W. Jackson St., Chicago, Ill. Approx. $1,000,000. C. A. Morey, c/o owner, ch. engr. CD 8/17.

Pa., Phila.—WAREHOUSE, etc.—Bids Asked—Stewart C. Barnett, engr., 505 Cooper St., Camden, N. J., warehouse and loading platform for Edward K. Tryon, 809 Arch St. Approx. $68,000.

Tex., Abilene—REFINERY—Bids Asked—Onyx Refining Co., Abilene, refinery expansion, $650,000.

Tex., Dallas—STORAGE—Bids Asked—The Ruberoid Co., Harrys Rd. and Singleton Blvd., roofing machinery and dry felt storage, $100,000. Bids 10/16 rejected. Stokes & Wilson, 406 Burt Bldg., engrs. CD 10/23, under LB.

Tex., Nacogdoches—PLANT UNIT, etc.—Bids Asked—Humble Oil & Refining Co., Humble Bldg., Houston, metering plant unit, $100,000; dehydration plant, $175,000. CD 10/24.

SOON LETS CONTRACT

Ill., Chicago—FACTORY—Central Steel & Wire Co., 3000 W. 51 St., Zone 32, soon lets contract, 102,000 sq. ft. factory addn. $700,000. Friedmand Alschuler & Sincere, 223 W. Jackson St., Zone 6, archts. CD 6/16/49.

Neb., Lincoln—EQUIPMENT—Lincoln Telephone & Telegraph Co., 1342 M St., soon lets contract equipment bldg. with offices. $500,000. M. I. Aitken, Stuart Bldg., archt. CD 5/9.

Pa., Chester—WAREHOUSE—Owner c/o Irvin Michaelson, archt., 1612 Market St., Phila., soon lets contract, warehouse. Approx. $500,000.

Pa., Villanova—BOILER HOUSE—Villanova College, Villanova, soon lets contract, boiler house and radial brick stack, $600,000. George M. D. Lewis, 445 Kressler Court, Scranton, archts. Gilboy & O'Malley, Mears Bldg., Scranton, Zone 3, consult. engrs. (Correction—engineers). CD 10/4.

CONTRACTS AWARDED

▲ Conn., New London—PLANT—Dow Chemical Co., Midland, Mich., styron plastic mfg. plant, on Thames River, 10 mi. north of here, to Austin Co., 16112 Euclid Ave., Cleveland, O., Approx. $1,000,000. CD 8/29.

Kan., Topeka—WAREHOUSE—Kansas Power & Light Co., 808 Kansas Ave., warehouse, to M. W. Watson, National Bank of Topeka Bldg., $350,000. Griest & Ekdahl, New England Bldg., archts. CD 1/3/47.

▲ La., Lake Charles—PLANT—Southern Alkali Corp., Lake Charles, chemical plant expansion, incl. addns. to caustic and chlorine plants, to Tellepsen Constr. Co., 1710 Telephone Rd., Houston, Tex., labor $1,450,000, materials by owner $1,750,000, total $3,200,000.

▲ Mich., Flint—FACTORY—Buick Motor Div., General Motors Corp., Ivan L. Wiles, gen. mgr., Flint, 1 and 2 story, 666,000 sq. ft. factory, to J. A. Utley Co., 723 New Hampshire St., Royal Oak, approx. $65,000,000, Albert Kahn Associated Architects & Engineers, Inc., 345 New Center Bldg., Detroit, archt. CD 10/20.

▲ Miss., Brandon—PLANT—Marquette Cement Co., c/o contractor, cement plant, to M. T. Reed Constr. Co., 162 Millsaps Ave., Jackson. Approx. $3,000,000. CD 10/4.

Neb., Lincoln — GRAIN ELEVATOR — Westcentral Cooperative Grain Co., Grain Exchange Bldg., Omaha, 2,250,000 bu. grain elevator, to Chalmers & Borton, Hutchinson, Kan., Approx. $900,000. Bids 10/21. CD 10/20.

▲ N. J., New Brunswick—YARD MASTERS, etc.—Pennsylvania R. R. Co., L. P. Struble, ch. engr. (Eastern Region) Broad St. Station, Phila. 4, Pa., yard masters bldg., siding facilities, grading, to Lawrence E. Pilot & Sons, 30 St. Station, Phila. 4, Pa., $1,500,000. CD 10/17, under CA.

Pa., Phila.—FACTORY, etc.—Electric Storage Battery Co., 19 St. and Allegheny Ave., 2 or 3 story masonry factory and office to Wm. F. Lotz, 1000 Orthodox St., $400,000. Bids 10/2. CD 9/26.

▲ Pa., Pittsburgh—WAREHOUSE—Kroger Grocery Co., 35 E. 7 St., Cincinnati, O., design and construction 1 and 2 story, 325x450 ft. steel, brick, block warehouse to Rust Eng. Co., 575 6 Ave., Approx. $1,500,000. CD 5/1.

▲ Tex., Beaumont—POWER PLANT, etc.—Texas Gulf Sulphur Co., 2nd Natl. Bank Bldg., Houston, power plant and water pump units and power generating units, to Consolidated Western Steel Corp., Orange, Approx. $975,000 and approx. $860,000, respectively. CD 10/10.

Tex., Garwood—INJECTION UNIT—Superior Oil Co., Oil & Gas Bldg., Houston, injection unit, near here, own forces. $550,000. CD 2/7.

Que., Waterville—PLANT, etc.—Sponge Rubber Co. of Canada Ltd., Waterville, 1 story, no bsmnt., 103x445 ft., rein.-con., structural steel, brick block plant and office to R. E. Stewart Constr. Corp., 266 Wellington St. S., Sherbrooke. Approx. $550,000. Bids 9/25. CD 9/20.

UNCLASSIFIED

BIDS ASKED

Ala., Montevallo—SWIMMING POOL—B. A. 11/8—Alabama College, c/o Warren, Knight & Davis, archts., Protective Life Bldg., Birmingham, swimming pool. Plans deposit $15.

Nebraska—RURAL DISTRIBUTION LINES—B. A. 11/8—Loup River Public Power Dist., Columbus, 70 mi. rural distr. lines, Holt, Rock and Brown Counties. $225,000. P. F. Hampton, c/o owner, ch. engr. CD 9/1/49.

Que., Grande Greve—FISHING HARBOR—B. A. 11/8—Acting Secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., fishing harbor, $106,000. Plans deposit $25. R. Blais, c/o owner, engr. CD 3/3.

N. Y., New York—GRADING PARKING AREAS, etc.—B. A. 11/9—At office of Chief Engineer of Port of New York Auth., 111-8 Ave., Zone 11, grading, paving, fencing for bus parking areas adjacent to Lincoln Tunnel approach ramps to Port Auth. Bus Terminal, Contr. LT-14. Plans deposit $10.

Pennsylvania—DAM—B.A. 11/9—General State Auth., 18 and Herr Sts., Harrisburg, dam for formation of recreational lake in Laurel Hill State Park, Jefferson Twp., Somerset Co. $140,000. Plans deposit $10. Michael Baker, Jr. Inc., Baker Bldg., Rochester, engrs. CD 5/26.

† Washington—STRUCTURAL STEEL, etc.—B.A. 11/9—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Odair, misc. structural steel and aluminum for Grand Coulee Dam, Columbia Basin Proj., Spec. DS-3229. L. N. McClellan, ch. engr.

† Wash., Richland—RADIO COMMUNICATION SYSTEM—B.A. 11/9—General Electric Co., operator of Richland and Hanford Works for Atomic Energy Comm., Richland, radio communication system. Bids 8/15 withdrawn. CD 7/28.

† Wyoming—CIRCUIT BREAKERS, etc.—B. A. 11/9—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Sinclair, circuit breaker, disconnecting switches grounding blades for Seminole Power Plant addns., Kendrick Proj., Spec. DS-3209. L. N. McClellan, ch. engr.

† N. Y., Scotia—SECURITY FENCE—B.A. 11/10—Pub. Wks. Office, Third Naval Dist., 90 Church St., New York, Zone 7, security fence, Naval Reserve Training Center, Spec. 29626. Plans deposit $10.

† South Dakota—ACCESS RAILROAD—B.A. 11/10—U. S. Eng., 1709 Jackson St., Omaha, Neb., access railroad for Oahe Reservoir Proj., in Stanley Co., near Pierre, Spec. No. CIVENG 25-066-51-36. CD 10/11.

Tex., Stephenville—SWIMMING POOL—B. A. 11/12—John Tarlton State College, Stephenville, rein.-con. swimming pool, $50,000. Wyatt C. Hedrick, 1005 First Natl. Bank Bldg., Fort Worth, archt. and engr.

Ga., Cordele—SWIMMING POOL, etc.—B.A. 11/13—State Dpt. Parks, State Capitol Bldg., Atlanta, swimming pool and bath house at Georgia State Veterans Memorial Park. Plans deposit $25. Fuller & Beckett, 88 Walton St. N. S., Atlanta, archts. CD 11/13/46.

† N. C., Camp Lejeune—PRESERVATION FACILITIES—B. A. 11/13—Pub. Wks. Office Bldg. No. 1005, Marine Barracks, preservation facilities in electronics shop Bldg. 909 at Marine Barracks, Spec. 25427. Plans deposit $10.

† North Dakota—TRANSFORMERS—B.A. 11/14—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., three 115,000 volt insulated, 69,000 to 69/115-volt, double-secondary 60-cycle, oil-immersed, outdoor potential transformer for Devils Lake sub-station, three 115,000 volt-insulated, 69,000-69/115 volt, double-secondary, 60-cycle, oil-immersed outdoor potential transformers for Jamestown sub-station, Missouri River Basin Project, Transmission Div. Spec. DS-3225. Bid date changed. CD 10/24.

South Dakota—RURAL DISTRIBUTION LINES—B. A. 11/14—Rosebud Electric Assn., Gregory, 421.7 mi. rural distr. lines, Tripp Co. $450,000. Raymond H. Reed & Co., Columbus, Neb., engrs. CD 7/10.

Calif., Los Angeles—TRANSIT SHED—B. A. 11/15—City Harbor Dpt., Branch City Hall, San Pedro, steel, concrete transit shed at Berth 155. $700,000. E. A. Earl, harbor engr. CD 5/27/49.

▲ Texas—GAS TRANSMISSION LINE—Bids Asked—Humble Oil & Refining Co., Humble Bldg., Houston, 50 mi. 8 in. natural gas transmission line, Nacogdoches to near Longview. $1,000,000. CD 10/24.

LOW BIDDERS

Ala., Mobile — UNLOADING TOWER — Alabama State Dpt. Docks & Terminals, c/o J. B. Converse & Co., engrs., Box 1084, Mobile, Oct. 3, erecting traveling unloading tower from Hey & Patterson Inc., 55 Water St., Pittsburgh, Pa., $534,000. CD 9/13.

Ala., Opelika—SWIMMING POOL, etc.—City, rejected bids Oct. 17, swimming pool and recreation bldg., L. B. $197,756. CD 10/18, under LB.

Missouri—RURAL DISTRIBUTION LINES—Webster Electric Co-operative, Marshfield, rejected bids Sept. 29, 90.6 mi. rural distr. lines and 44.09 mi. conversions in Webster, Dallas, Greene, Christian and Douglas Counties, being H section of sys. L. B. $165,589. Frank Horton & Co., Lamar, engrs. Will re-advertise. (Correction—status of project) CD 10/20, under CA.

N. Y., Bear Mountain—ROLLER SKATING RINK—Bureau Contracts & Accounts, Albany, rejected bids Sept. 20, roller skating rink at Bear Mountain State Park, L. B. $816,887. New Bids to be received Oct. 25. CD 9/27, under LB.

Oklahoma—RURAL DISTRIBUTION LINES—Canadian Rural Electric Co-operative, Seminole, 350 mi. rural distr. lines, from R. E. Mattison, Britton, $430,942. Est. $395,000. E. R. Taylor & Co., 4107 E. 11 St., Tulsa, engrs. CD 5/27/49.

Tenn., Chattanooga—FIRE ALARM SYSTEM—City, City Hall, Oct. 19, fire alarm sys., Sect. 1 from Terrell Electric Co., 1104 McCallie Ave., $159,997 ***Sect. 2, from Gamewell Co., 1238 Chestnut St., Boston, Mass., $112,492.

CONTRACTS AWARDED

▲† Alaska, Fort Richardson—OUTSIDE UTILITIES—U. S. Eng. APO 942, c/o PM, Seattle, Wash., outside utilities, Spec. 50-29 to S. Patti Constr. Co. & MacDonald Constr. Co., 1340 Admiral St., Kansas City, Mo., $2,434,933. Est. $2,489,417. Bids 8/1. CD 8/14, under LB.

(Proposal Advertisements see pp. 105 to 108)

are businessmen

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1. Accept—or reject—people on *their individual worth.*
2. Don't listen to or spread rumors against a race or a religion.
3. Speak up, wherever we are, *against* prejudice. Work for understanding.

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THE ADVERTISING COUNCIL

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U. S. Government

Department of Commerce, Bureau of Public Roads, October 20, 1950. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., E.S.T., NOVEMBER 28, 1950, for Project 1F2, Baltimore-Washington Parkway, Prince Georges and Anne Arundel Counties, Maryland. Reinforced Concrete Structure and Approaches. Length 0.159 mile. The approximate quantity of the more important items are as follows: 27,500 cu. yd. Excavation, 5,850 cu. yd. Cement Concrete, 900,000 lb. Reinforcing Steel, 88,100 lb. Structural Steel and 30,000 lin. ft. Untreated Timber Piling. Minimum wage rates have been fixed as required by law. For plans and specifications, a deposit of $10.00 cash or CERTIFIED check made payable to the Treasurer of the United States, will be required to insure their return within 15 days after the opening of bids. Plans, specifications and proposal forms may be obtained at the address given above. H. J. Spelman, Division Engineer. (152)

MISSOURI RIVER BASIN PROJECT, Design Section, Casper, Wyoming, October 17, 1950.
UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION. NOTICE IS HEREBY GIVEN that sealed bids on Specifications No. 7038-159 will be received at P.O. Box 280, Reclamation Center, Casper, Wyoming, until 10 a.m., Mountain Standard Time, November 16, 1950, and then publicly opened for furnishing and delivering Structural Steel For Pine Bluffs Rural Substation Additions, Transmission Division, Wyoming, Missouri River Basin Project.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: A. A. Batson, Regional Director, New Customhouse, Denver, Colorado, and L. J. Matthews, District Manager, P.O. Box 280, Casper, Wyoming. No charge to prospective bidders for copies of the specifications; to others $0.50 per copy, not returnable. (154)

OFFICIAL PROPOSALS

Bids: November 20, 1950 (157)

Expansion of Fuel Storage Facilities—Phase I

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
CONTRACT NYA-139

Sealed proposals for Expansion of Fuel Storage Facilities—Phase I, at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1109, 111 8th Ave., New York 11, until 2:00 P.M. Monday, November 20, 1950, and thereafter in the Auditorium of the Authority at the same address until 2:30 P.M., on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $25. per set. The deposit will be refunded if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, November 2, 1950

Bids: December 7, 1950 (156)

Sewerage System

TOWN OF FAIRFIELD
CONNECTICUT

Sealed Proposals for construction of a Sewerage System will be received by the Purchasing Authority and the Sewer Commission at the office of the Board of Selectmen, in the Town Hall, 611 Old Post Road, Fairfield, Connecticut, until 2:30 P.M. Eastern Standard Time on December 7, 1950, and then publicly opened and read. No proposal will be accepted after said hour. Proposals will be received on the following contracts:

Contract V —East Trunk Sewer, Section 1
Contract VI —East Trunk Sewer, Section 2
Contract VII —Turney Creek Sub-Trunk Sewer
Contract VIII—Branch and Lateral Sewers
Contract IX —Branch and Lateral Sewers
Contract X —West Trunk Sewer
Contract XI —Branch and Lateral Sewers
Contract XII —Branch and Lateral Sewers

Information for Bidders, Proposal forms, Specimen Contract, Plans and Specifications and copies or specimens of all pertinent documents may be examined at the offices of Bowe, Albertson & Associates, Engineers, 116 William Street, New York City, New York, and at the office of the Town Engineer, Silliman School, 608 Jennings Road, Fairfield, Connecticut, between the hours of 10 A.M. and 4 P.M. daily except Saturdays, Sundays and holidays, and obtained upon making a deposit of fifteen ($15.00) dollars, which will be refunded within thirty (30) days after the date when the proposals are opened, upon return of the aforementioned data, undamaged.

A bid bond for 10% of the amount bid must be submitted by the bidder with each bid as a guarantee that, in case a contract is awarded to him, he will execute such contract, and furnish a Performance and Labor and Material Bond in the full amount of the bid, satisfactory to the Sewer Commission as to form and sureties.

The Town of Fairfield reserves the right to reject all bids. Bids which are irregular in form, incomplete, conditional or qualified may be disregarded and rejected as improper except that the Purchasing Authority and the Sewer Commission may waive any defects or irregularities.

PURCHASING AUTHORITY
TOWN OF FAIRFIELD
By: Dimill L. Kinnie
First Selectman
SEWER COMMISSION
TOWN OF FAIRFIELD
By: Abner W. Mitchell
Chairman
BOWE, ALBERTSON & ASSOCIATES
Engineers

Bids: November 27, 1950 (145)

Sanitary Sewerage Facilities

Sealed bids will be received by the Board of Supervisors of Fairfax County, Virginia, at the Office of the Sanitary Engineer, County of Fairfax, VEPCO Building, Fairfax, Virginia, until MONDAY, NOVEMBER 27, 1950, at 2:00 o'clock, P.M., Eastern Standard Time, for the construction of approximately 80,000 feet of 8" to 18" sanitary sewers, sewage lift station, and appurtenant facilities in Sanitary District No. 1, which has been designated as "Contract No. 6", and promptly thereafter they will be publicly opened and read in the Board of Supervisors Room, County Office Building, Fairfax, Virginia.

Plans, specifications and contract documents may be examined at the Office of Sanitary Engineer, and copies thereof may be obtained from G. Bubard Massey, Consulting Engineer, Ford Building, Fairfax, Virginia, upon payment of $25.00 in cash for each set, which amount shall not be returnable. Bids must be submitted on the forms supplied for this purpose and in strict accordance with the instructions therefor. Each bidder will be required to show evidence of possession of a certificate of registration as a contractor in the Commonwealth of Virginia before his bid will be considered.

Each bid must be accompanied by a bid bond or certified check made payable to the Treasurer of Fairfax County, Virginia, in the amount of at least five per centum (5%) of the total amount of the bid. The successful bidder will be required to furnish a performance and maintenance bond in a penal sum equal to the full contract price.

The time for completion of the contract is 360 consecutive calendar days and liquidated damages in the amount of $75.00 per day will be assessed in event of delay or default in the completion of the contract.

No bid may be withdrawn for a period of thirty (30) days after the actual opening thereof and the right is reserved to waive any informality therein and to reject any or all bids.

James J. Corbalis, Jr.
Sanitary Engineer, County of Fairfax
Fairfax, Virginia

OFFICIAL PROPOSALS

Bids: November 8, 1950 (159)

Sub-Surface Explorations

WASHINGTON SUBURBAN SANITARY COMMISSION
CONTRACT NO. 864-W

Sealed proposals for making approximately 2000 lineal feet of test borings for the determination of the location and nature of the rock underlying the site of the proposed Rocky Gorge dam, Prince George's County, Maryland, will be received at the office of the Washington Suburban Sanitary Commission, Hamilton Street, Hyattsville, Maryland, until Wednesday, November 8, 1950 at 2:00 P.M., Eastern Standard Time, at which place and time they will be publicly opened and read.

Plans and specifications may be obtained from the office of the Chief Engineer of the Commission, Hyattsville, Maryland.

Dwight B. Galt
Warren Browning
Leland G. Worthington
Commissioners

Bids: January 9, 1950 (140)

New Zealand Tunnel Contact: Wairarapa Railway Deviation

Tenders are being invited from firms in the United States and other countries for a contract involving the construction of approximately 5 miles 37.33 chains of single-track concrete-lined railway tunnel, together with approximately 1 mile 74 chains of approach formation. This project is known as the Rimutaka Tunnel Contract, for the Wellington-Wairarapa Railway Deviation in New Zealand.

Fencing, ballasting and platelaying of the permanent track, together with excavation of cuttings and construction of culverts outside the tunnel are not included in this contract.

Plans and specifications are available from the New Zealand Government Trade Commissioner, Dupont Circle Building, 1346 Connecticut Avenue, Washington 6, D. C. Tenders close with the Ministry of Works in Wellington on 9th January, 1951, and may be submitted through the New Zealand Trade Commissioner in Washington.

Bids: November 13, 1950 (161)

Elevated Steel Water Tank

Sealed bids will be received until 9:00 A.M., November 13, 1950 A.D. in the office of the City Auditor and Clerk of Fort Lauderdale, Florida, for Elevated Steel Water Tank for the Waterworks System.

This work involves the installation of one (1) 1,000,000 gallon elevated steel water tank of tubular tower construction.

Bidding blanks may be obtained from the office of the City Engineer. Plans and Specifications for the work are on file in the office of the City Engineer, and copies thereof may be obtained at the office of the City Clerk upon payment of $25.00 for each set. Any bidder, upon returning such set promptly and in good condition, will be refunded his payment; and any non-bidder, upon so returning his set, will be refunded $15.00.

A certified check for 5% of the bid, made payable to the City of Fort Lauderdale, Florida, shall accompany each proposal as evidence of good faith and responsibility of the bidder. This check shall be retained by the City of Fort Lauderdale as liquidated damages, should the bidder fail or refuse to enter into a contract with the City of Fort Lauderdale for the execution of the work embraced in the proposal, in the event the proposal of the bidder be accepted.

The City of Fort Lauderdale reserves the right to reject any or all bids.

F. D. RANKINS
City Manager

(Continued on page 107)

READ THE OFFICIAL
PROPOSAL COLUMNS OF
ENGINEERING NEWS-RECORD
THIS WEEK AND EVERY WEEK

U. S. Government
(Continued from page 106)

Department of Commerce, Bureau of Public Roads, October 16, 1950. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., E.S.T., NOVEMBER 17, 1950, for Project 1H2, Baltimore-Washington Parkway, Anne Arundel County, Maryland. Reinforced Concrete Structures and Approaches. Length 0.067 mile. The approximate quantity of the more important items are as follows: 19,500 cu. yd. Excavation, 6,410 cu. yd. Cement Concrete, 915,000 lb. Reinforcing Steel, 96,000 lb. Structural Steel and 24,000 lin. ft. Untreated Timber Piling. Minimum wage rates have been fixed as required by law. For plans and specifications, a deposit of $10.00 cash or CERTIFIED check made payable to the Treasurer of the United States, will be required to insure their return within 15 days after the opening of bids. Plans, specifications and proposal forms may be obtained at the address given above. H. J. Spelman, Division Engineer. (147)

GOVERNMENT OF THE DISTRICT OF COLUMBIA, DIRECTOR OF SANITARY ENGINEERING, D. C., October 23, 1950. SEALED PROPOSALS will be received in Room 509, District Building, 14th and 'E' Streets, N. W., Washington 4, D. C., until 2:00 p.m., EASTERN STANDARD TIME, November 30, 1950, and then publicly opened and read for GENERAL INSTALLATION AND CONSTRUCTION BRYANT STREET PUMPING STATION. Bryant Street, between 2nd and 4th Streets, N. W., Washington, D. C. Proposal forms, specifications and drawings may be obtained in the Office of Chief Clerk, E. D., Room 427, District Building, upon the deposit of a certified check made payable to the Collector of Taxes, D. C., in the amount of Twenty-five Dollars ($25.00) for each set. (Telephone National 6000, Extension 2378) (155)

OFFICIAL PROPOSALS

Bids: November 16, 1950 (160)

Construction of Stone Jetty

TOWN OF FAIRFIELD, CONN.

Sealed Proposals for construction of a stone jetty will be received by the Purchasing Authority of the Town of Fairfield, in the Town Hall, 611 Old Post Road, Fairfield, Connecticut, until 2:30 P. M. November 16th, 1950, and then publicly opened and read. No proposals will be accepted after said hour.

Information for Bidders, Proposal forms, Specimen Agreement, Plans and Specifications and copies or specimens of all pertinent documents may be examined at the office of the Purchasing Authority, Town Hall and at the office of the Town Engineer, 608 Jennings Road, Fairfield, Conn., between the hours of 10 A. M. and 4 P. M. daily except Saturdays, Sundays and holidays, and obtained upon making a deposit of five ($5.00) dollars, which will be refunded within 15 days after the date when the proposals are opened, upon return of the aforementioned data, undamaged.

A bid bond in the amount of 10% of bid must be submitted by the bidder with his bid as a guarantee that, in case the contract is awarded to him he will, within ten days thereafter, execute such contract, and furnish a satisfactory Performance Bond and Labor and Material Bond.

The Town of Fairfield reserves the right to reject all bids. Bids which are irregular in form, incomplete, conditional or qualified may be disregarded and rejected as improper except that the Purchasing Authority may waive any defects or irregularities.

PURCHASING AUTHORITY
TOWN OF FAIRFIELD
By EMMILL L. KINNIE
First Selectman

Eugene L. Lehr
Town Engineer.

"Opportunity" Advertising:
Think
"SEARCHLIGHT"
First

OFFICIAL PROPOSALS

Bids: November 15, 1950 (151)

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on November 15, 1950 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. NICKERSON, Dist. Engr., 353 Broadway, Albany, N. Y.				
Essex	FARC 50-58	Upper Jay-Keene, S. H. 5236 Proj. No. F1034(1)	5.27	Asph. Concrete, Opt.	$44,000 Plans $15	$792,000
Greene	FASSH 50-12	Phoenicia-Stony Clove, Pt. 4 Proj. No. S937(3)	1.63	Bit. D. S. T. Gravel 42½' Span I-Beam 21' Span Conc. Slab	$10,000 Plans $15	$186,000
Saratoga	FAC 50-14 FARC 50-59	City of Mechanicville (So. City Line to Central Ave.) Mechanicville-Clifton Park, S. H. 1345 Proj. No. U319(2)	0.89	9" Cem. Conc. Pavt. 24', 46', Var. Wide.	$22,000 Plans $10	$405,000
Schenectady	FA STC 50-13	Schenectady City-Mohawk 1.08 Thruway Connection (Broadway to Altamont Ave.) Proj. No. U323(9)		Found Course R. O. B. Gravel (Asph. Conc. Ty. 1A, Opt. = 0.47 Miles Temporary Pavement)	$82,000 Plans $10	$1,486,000
		DISTRICT No. 3				
		WM. ROBINSON, Dist. Engr., 301 E. Water St., Syracuse, N. Y.				
Onondaga	FAOT 50-8	Ontario Thruway (Jordan-Warners) Proj. No. F.I. 1071(10)	7.08	Grading & Structures = 6.80 Miles Misc. Work = 0.28 Mile	$70,000 Plans $25	$1,290,000
Onondaga	FASS 50-10	High Bridge Road, Co. Rd. No. 8 Proj. No. S329(1)	3.46	25' Span Closed Box Bridge 9" Cem. Conc. Pavt. 24' Wide Reinf. Conc. Slab 30' Span 4 Span Alpha I-Beam 92.5' Each Alpha Royalty = $373.00	$45,000 Plans $15	$826,000
		DISTRICT No. 4				
		A. R. MULLIGAN, Dist. Engr., Barge Canal Terminal, Rochester, N. Y.				
Ontario	FAC 50-13	Canandaigua City: Main Street, FAC 49-7 Proj. No. U338(6)	1.42	Traffic Signal System	$500 Plans $10	$8,000
Wyoming	FAS SH 50-11	Persons Cors.-Bennington, Pt. 1 Proj. No. S290(1)	3.99	D. S. T. Graded Gravel	$17,000 Plans $10	$300,000
		DISTRICT No. 9				
		F. W. DONOVAN, Dist. Engr., 71 Frederick St., Binghamton, N. Y.				
Broome	FASH 50-13	Johnson City-Rt. 17 Connection Proj. No. U1092(1)	0.45	Substructure Susquehanna River Bridge Substructure Vestal Rd. Grade Sep. Substructure S. H. 1613 Grade Sep. Reinf. Conc. Box Br. 2 Spans 24.64' Tot. Misc. Work Incl. Access Drive of Asph. Conc. Ty. 1A, Opt. = 0.03 Mile	$42,000 Plans $15	$733,000
Chenango	FASSH 50-15	Bainbridge-Masonville, Pt. 1 Proj. S-273(1)	0.61	Asp. Conc. Ty. 1-A, Opt. = 0.13 Mile Grading = 0.22 Mile Intersecting Roads Asp. Conc. Ty. 1-A, Opt. = 0.26 Mile	$8,000 Plans $10	$140,000
		DISTRICT No. 10				
		J. J. DARCY, Dist. Engr., Montauk Hwy. at Little E. Neck Rd., Babylon, L. I., N. Y.				
Kings	FA BQE 50-4	Brooklyn-Queens Expressway, Contract 13 (Washington Plaza-Metropolitan Ave.) Proj. No. U1066(12)	0.54	Grading, Paving, Structures & Misc. Work Including 2 Multiple Span Alpha I-Beam Viaducts Alpha Royalty $3,276.64	$130,000 Plans $50	$2,374,000
Nassau	FARC 50-60 FASH 50-14	Hillside Avenue, Pt. 1, S. H. 1948 Hillside Avenue, Pt. 2 Proj. No. U1002(1)	1.18	9" Cem. Conc. Pavt. 48' Wide = 1.00 Mile Misc. Work = 0.18 Mile	$30,000 Plans $25	$580,000

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders." When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated. The right is reserved to reject any or all bids.

H. D. TALLAMY
SUPT. OF PUBLIC WORKS

Bids: November 29, 1950 (158)

Permanent Control Tower

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
CONTRACT NYA-112

Sealed proposals for construction of the permanent control tower (exclusive of the foundations therefor) at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 2:00 P.M. Wednesday, November 29, 1950, and thereafter in the Auditorium of the Authority at the same address until 2:30 P.M., on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $100, per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman.
New York, November 2, 1950.

(Continued on page 108)

OFFICIAL PROPOSAL

RATE: $1.00 per line (or fraction) per insertion.
CLOSING DATE: 12:00 p.m. Friday for issue out following Thursday.
SEND COPY: Official Proposal Division, Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

OFFICIAL PROPOSALS
(Continued from page 107)

Bids: November 28, 1950 (148)

Construction of Sewage Treatment Plant

C-352

CITY OF SAGINAW, MICHIGAN

BIDS—NOVEMBER 28, 1950

Sealed proposals will be received by the City of Saginaw, Michigan, in the office of Mr. Roy A. Benway, Purchasing Officer, Rm. 104, City Hall, Saginaw, Michigan, up to 2:00 p.m., E.S.T., November 28, 1950, for the construction of the Sewage Treatment Plant:

DIVISION C
SEWAGE TREATMENT PLANT

Section No. I —General.
Section No. II —Mechanical Equipment and Piping.
Section No. III —Plumbing, Heating, and Ventilating.
Section No. IV —Electrical.

The Proposal, Contract Form, Plans and Specifications under which the work will be done are on file and may be examined at the office of the Purchasing Officer, Room 104, City Hall, Saginaw, Michigan, or at the office of the Consulting Engineers, Hubbell, Roth & Clark, Inc., 2840 Buhl Building, Detroit 26, Michigan. Copies of the plans and contract documents for the work may be obtained from the Purchasing Officer or the Consulting Engineers by making a deposit of twenty-five dollars ($25.00) for each set of plans and contract documents, which deposit will be refunded upon the return of plans and contract documents in good condition within thirty (30) days after the closing of bids.

A certified check or bidder's bond for a sum not less than five per cent (5%) of the proposal, will be required with each proposal.

All bids will be publicly opened and read.

All proposals shall be based on completion of all work by March 31, 1952.

The City of Saginaw reserves the right to reject any or all proposals and to waive any informality in bidding, and to accept any proposal for any section of the work. No proposal may be withdrawn for a period of thirty (30) days after the scheduled closing time for acceptance of the proposals.

The successful bidder will be required to furnish satisfactory performance, labor, and material bonds.

ROY A. BENWAY
Purchasing Officer

Bids: November 10, 1950 (149)

New Jersey Turnpike Authority

Sealed proposals will be received by the New Jersey Turnpike Authority for:

CONTRACT NO. 68

The work to be performed under this Contract consists of grading and area drainage for Service Areas 10-N and 10-S on both sides of the New Jersey Turnpike between Sta. 456 and Sta. 485, Section 5, in Woodbridge Township; construction of a 1400-foot sewer line and a fully equipped temporary sewage lift station, together with appurtenant work.

Each Service Area site embraces an area of approximately 16 acres.

Completion date is April 1, 1951, for No. 10-N and May 1, 1951 for No. 10-S.

Principal items of work are:

Borrow Excavation	400,000 Cu.Yds.
Other Excavation	10,000 Cu.Yds.
Sanitary Pipe	1,450 Lin.Ft.
Drain Pipe	600 Lin.Ft.
Manholes	6 Units
Lift Station, complete	Lump Sum

Proposals will be received at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton, New Jersey, until 10:30 o'clock on the morning of November 10, 1950, and thereafter in the Veterans Room of the War Memorial Building, Memorial Drive at Willow Street, Trenton, New Jersey, until 11:00 a.m. on the same date, at which latter time and place said proposals will be publicly opened and read.

The receipt and opening of proposals is subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their proposal a **revised** financial statement and a statement of plan and equipment.

Contract Documents may be seen, and may be inspected by prospective bidders during office hours, after October 24, 1950, at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey and at the offices of the Engineer, Fay, Spofford & Thorndike, 11 Beacon Street, Boston, Massachusetts, and 25 Livingston Avenue, New Brunswick, New Jersey.

Contract Documents, exclusive of cross-sections, will be furnished for $5.00 for each set upon application to the Authority. The payment will not be refunded and Contract Documents are not required to be returned. Plans showing grading cross sections may be examined at the office of the Authority or at the New Brunswick office of the Engineer.

Proposals must be made upon the standard proposal forms in the manner designated in the Standard Specifications for Construction of the New Jersey Turnpike, Second Edition, August 1950, and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the Contract on the outside, and must be accompanied by a certified check drawn to the order of the New Jersey Turnpike Authority and a proposal bond, each for not less than five percent of the amount of the proposal, but not less than $500.00 nor more than $200,000.00 and must be delivered with proposal on or before the hour named. Copies of the proposal form to be used for submitting proposals, of the form for proposal bond, of the form to be used for financial statement and plan and equipment statement to be submitted with proposal, and special addressed envelopes are furnished in detached form with the Contract Documents.

The Contract will be awarded or proposals rejected within 15 days after date of opening. The right is reserved to reject any or all proposals.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast
Chairman

October 20, 1950

Bids: November 17, 1950 (150)

New Jersey Turnpike Authority

Sealed proposals will be received by the New Jersey Turnpike Authority for:

CONTRACT NO. 64

The work to be performed under this contract involves the construction of pavement for three interchanges; pavement for Turnpike highway and for cross-roads at various locations; providing storm drains and appurtenant structures for drainage; excavating portions of embankment and overload and depositing the materials so excavated on the embankments; topsoiling and other incidental work in connection with the construction of the New Jersey Turnpike from Morse's Creek, City of Linden, Union County to Hackensack River, City of Kearny, Hudson County.

Principal items of work include:

10 Inch Portland Cement Concrete Pavement with 6 Inch Special Sub-base, or	430,000	Sq.Yds.
4½ Inch Asphaltic Concrete Pavement with 8 Inch Macadam Base and 6 Inch Sub-base	460,000	Sq.Yds.
Bridge Approach Slabs	18,000	Sq.Yds.
Roadway Excavation, Earth	918,000	Cu.Yds.
Shoulders	196,700	Sq.Yds.
4 Inch Topsoiling	620,000	Sq.Yds.
Storm Drains (various sizes)	50,200	Lin.Ft.
Manholes	71	Each
Inlets	627	Each

Proposals will be received at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey, until 10:30 o'clock on the morning of November 17, 1950, and thereafter in the Veterans Room of the War Memorial Building, Memorial Drive at Willow Street, Trenton, New Jersey, until 11:00 A.M. on the same date, at which latter time and place said proposals will be publicly opened and read.

The receipt and opening of proposals is subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their proposal **a revised** financial statement and a statement of plan and equipment.

Contract documents may be seen and may be inspected by prospective bidders during office hours, after October 23, 1950, at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton, New Jersey and at the office of the Engineers, Edwards and Kelcey, Frederic R. Harris, Inc., and O. J. Porter & Company, Associated, 3 William Street, Newark, New Jersey.

Contract Documents will be furnished for five ($5) dollars for each set, upon application to the Authority. The payment will not be refunded and the Contract Documents are not required to be returned.

Proposals must be made upon the standard proposal forms in the manner designated in the Standard Specifications for Construction of the New Jersey Turnpike, and must be enclosed in sealed, special addressed envelopes bearing the name and address of the bidder and the number of the contract on the outside, and must be accompanied by a certified check drawn to the order of the New Jersey Turnpike Authority and a proposal bond, each for not less than five (5%) percent of the amount of the proposal, but not less than $500. nor more than $200,000. and must be delivered at the above place on or before the hour named. Copies of the proposal form to be used for submitting proposals, of the form for proposal bond, of the form to be used for financial statement and plan and equipment statement to be submitted with proposal and special addressed envelopes are furnished in detached form with the Contract Documents.

The Contract will be awarded or proposals rejected within thirty (30) days from the date of opening proposals. The right is reserved to reject any or all proposals.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast
Chairman

October 20, 1950

Bids: November 10, 1950 (152)

Victory Memorial Highway Bridge Piers on the Cumberland River at Nashville, Tennessee

Two River Piers
Project No. U-026-1-(1) Pt. I Davidson County

Sealed proposals will be received by the Department of Highways and Public Works of the State of Tennessee at their offices in the War Memorial Building, Nashville, Tennessee until 10:00 A.M. Central Standard Time on Friday, November 10, 1950, for the construction of Project No. U-026-1-(1) Pt. I Davidson County consisting of the two main piers of a Highway Bridge over the Cumberland River in the City of Nashville on new alignment of Main Street projected, and will be publicly opened and read immediately thereafter in the War Memorial Auditorium.

The work to be performed will consist of the construction of the footings and the two stone faced main piers in the navigable section of the river.

QUANTITY	UNIT	ITEM
1,080	Cu. Yds.	Wet Excav. (Bridges)
500	Cu. Yds.	Rock Excav. (Bridges)
5,500	Lbs.	Structural Steel
5,515	Cu. Yds.	Class "B" Concrete
40,600	Lbs.	Steel Bar Reinf.
24,535	Cu. Ft.	Granite Masonry

The estimated quantities are as follows:

Bidders will be required to file with their bid a financial, equipment and experience questionnaire made out in detail, which forms will be furnished with bid blanks.

A bidders bond in the amount of $25,000.00 will be required from a Surety or Sureties qualified to do business in Tennessee and holding certificates of authority from the United States Treasury Department and conforming to the last published Treasury statement on acceptable sureties.

Plans, specifications and contract documents with forms, questionnaires and necessary information, will be open to public inspection at the offices of the Highway Department in the Memorial Building at Nashville, Tennessee. Proposals available at five ($5) dollars each with no refund, plans are available at the cost of printing.

Before the execution of the contract the successful bidder will be required to be authorized to do business in and licensed in the State of Tennessee.

No bid may be withdrawn after being deposited or filed.

The right is reserved to reject any or all bids and to waive all technicalities.

DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS STATE OF TENNESSEE
Charles F. Wayland Jr.
COMMISSIONER

SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.20 cents a line, minimum 4 lines. To figure advance payment count 5 average words as a line.
INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.00 a line an insertion.

INFORMATION.
BOX NUMBERS count as 1 line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED—RATE PER INCH:
The advertising rate is $11.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches —to a page. E.N.R.

NEW ADVERTISEMENTS received by November 3 at the New York Office 330 W. 42 St., N. Y. 18, will appear in November 16th issue subject to space available

WANTED
GRADUATE CIVIL ENGINEERS WITH OR WITHOUT EXPERIENCE FOR HIGHWAY AND BRIDGE LOCATION, DESIGN AND CONSTRUCTION
Starting Salary $310 per Month
Opportunity for Permanent Civil Service Positions
Give age, experience and education
G. T. McCOY,
State Highway Engineer
Division of Highways
P. O. Box 1499
Sacramento, California

Engineers Wanted
Civil—Electrical—Mechanical—Structural
***Apply* KAISER ENGINEERS**
Division of Kaiser Industries, Inc.
1924 Broadway Oakland, California

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

WANTED, SEVERAL engineering graduates under 35, by large industrial fire prevention organization for field work involving periodic inspections and special consulting service. Electrical and Chemical engineers preferred. Permanent. Openings in United States and Canada. P-7287, Engineering News-Record.

WANTED: BRIDGE Designer; structural draftsman; experienced checker; highway engineer experienced in traffic interchange design. Give complete details including salary desired. P-7980, Engineering News-Record.

WANTED: EXPERIENCED Structural Designers in steel or reinforced concrete. Also, concrete detailers. Seelye, Stevenson & Value, 101 Park Avenue, New York, N. Y.

CONSTRUCTION EXECUTIVE Thoroughly experienced with building construction of all types. Should be graduate engineer who knows plans thoroughly. Must be able to deal with Owners and Architects. One accustomed to handling large volume of correspondence, interviewing subcontractors, awarding subcontracts. Must have ability to organize and manage jobs from main office. The man we want should know every phase of the building construction business, both engineering and management. Write stating age, health, experience, salary, when available. Fleisher Engineering & Construction Co., 936 Ellicott Square Bldg., Buffalo, N. Y.

DRAFTSMAN — ARCHITECTURAL, experienced in industrial building design. P-8060, Engineering News-Record.

FIELD ENGINEER for Hydraulic Division of Electrical Department large Copper Company Chile, South America. Three-year contract, transportation both ways and salary while traveling paid by company. In reply give complete details. P-8075, Engineering News-Record.

WANTED IMMEDIATELY General Superintendent for multi-million dollar commercial project located in Midwest. Must be capable. Steady job for the right man. State age and experience, give references and enclose late photograph. Address Post Office Box 285, Columbus, Ohio.

WANTED
MECHANICAL ENGINEERS
College graduates experienced in piping machinery layout and equipment and machinery design.
ARCHITECTURAL and STRUCTURAL DRAFTSMEN
College graduates experienced in industrial building.
Work is in large industrial plant in western North Carolina.
Applicants please state age, education, previous experience and salary desired; photograph or snapshot not returnable.
P-8093, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

POSITIONS VACANT

DESIGNER DRAFTSMAN Wanted for Engineering Department of a large pulp and paper mill. Knowledge of structural steel and reinforced concrete preferred. Job consists of layout of process equipment, piping, and material handling, also renovation and improvement of existing buildings and equipment. Experience in above not essential, but applicant should be able to design the structural elements relative to these layouts. Apply Personnel Manager, West Virginia Pulp and Paper Company, Mechanicville, N. Y.

CONSTRUCTION COMPANY, operating State of Florida, Alabama, and Georgia, require A No. 1 thoroughly experienced job superintendent. Must be able to produce excellent references as to character and experience record in general building construction, reinforced con. etc. Excellent opportunity for an experienced applicant, who can meet our requirements. P-8091, Engineering News-Record.

WANTED: BRIDGE Designer; structural draftsman; small office. The Standard Engineering Corp., P. O. Box 1068, Albany, N. Y.

SANITARY ENGINEER Wanted — Manufacturer of waste treatment equipment with national acceptance requires skilled sanitary engineer for sales promotion work. Sanitary engineering experience, intimate knowledge of treatment processes essential. Must travel. Submit full particulars. P-8113, Engineering News-Record.

SELLING OPPORTUNITIES OFFERED

ADDITIONAL INCOME. Men with good contacts to Power companies. (New-Engl., N. Y., Pa., Ohio, Ky., Calif.) required. SW-8051, Engineering News-Record.

MAN WITH Construction experience to learn to estimate and sell ornamental iron, rolling steel doors, fire escapes, etc. with manufacturers' agent, lower Michigan. SW-8085, Engineering News-Record.

EMPLOYMENT SERVICE

SALARIED PERSONNEL, $3,000-$25,000. This confidential service established 1920, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

(Continued on page 110)

ENGINEERS
Major oil company operating in the Middle East requires graduate engineers in numerous classifications, including:
CIVIL
ASST. CIVIL
MECHANICAL
ASST. MECHANICAL
ELECTRICAL
COMMUNICATIONS
FIELD CONSTRUCTION
Positions cover various fields of specialization in the above classifications. Vacancies are for both experienced and inexperienced men. If interested write giving complete outline of experience, education and personal history.
P-7941, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

Wanted
TOP NOTCH SPECIFICATION WRITER
For large Civil Engineering Office on Gulf Coast
Specializing in Heavy Construction.
Permanent Work—Excellent Pay.
Please reply to
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We anticipate increasing our engineering organization during the next several months for the design of Oil Refinery, Blast Furnace, Open Hearth, Steel Mill and Power Plants.

These men should be qualified as draftsmen, designers, checkers or higher engineering skills on design of piping, instrumentation, pressure vessels, structural steel, concrete, platework, heavy mechanical equipment and electrical.

If you are interested and have engineering design experience on this class of work, write to us for a personnel form for prompt consideration of your qualifications.

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Structural Steel Detailers Wanted

Pay above average, vacation with pay, steady work, modern air-conditioned offices. Company est. 30 years. Send detailed information.

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Graduates, experienced in design engineering and economic studies of steam-electric power plants and high voltage substations. Also, knowledge of power system relaying and preparation of specifications for switchboards and switchgear.

P-7341, Engineering News-Record
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Established national manufacturer of building materials will consider applications of men 30 to 40 years of age, with degree in civil engineering or architecture, and with building experience. The responsibility of the man selected will be to acquaint architects and engineers with our materials and systems and render service to these professions. Adequate schooling and information on products provided. State age, education, ambitions, business experience, salary requirement, etc. All applications treated in confidence.

P-8063, Engineering News-Record
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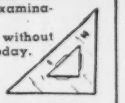

WILSON ENGINEERING CORP.
College House Offices - Dept. E.
Harvard Sq. Cambridge, Mass.

(Continued from page 109)

POSITIONS WANTED

CONSTRUCTION SUPERINTENDENT, 15 years experience all types public construction; estimating; pricing and sub-letting. Capable of managing complete project. Available to travel. PW-8024, Engineering News-Record.

FULL OR Part Time work as Construction Engineer, Superintendent, Draftsman or Surveyor, etc. Have Engineer's transit. 25 years experience on building and general construction work. Have P. E. license. PW-8097, Engineering News-Record.

LOCATION-CONSTRUCTION Engineer. Railroads, Highways, Bridges and Building PE license. 45, single. Speak, read, write, Spanish. Preference South America. Now employed. PW-8055, Engineering News-Record.

PROFESSOR CIVIL Engineering; Assoc. M. ASCE; 40, Ph.D. Now occupying teaching position in leading university. Responsible academic and governmental engineering experience. Interested in post involving administrative and executive opportunities such as Department Headship. Excellent health. Minimum salary $7500. PW-8083, Engineering News-Record.

ELECTRICAL SUPERINTENDENT 24 years experience in Distribution and Transmission Construction, available immediately. Best references. PW-8096, Engineering News-Record.

CIVIL ENGINEER (Registered — Massachusetts and Vermont) experienced design, supervision of construction and preparation plans, specifications for sewage and water treatment plants, incineration, highways, and industrial buildings. Qualified administrator—manager associated utilities, desires contact with municipalities contemplating employment of city manager. Presently employed related capacity. Location New England, or Southwest preferred. PW-8092, Engineering News-Record.

CIVIL ENGINEER, age 29, married, college graduate, five years as an Construction Engineer in earth moving, road construction, airports, sewers, and sanitation buildings. Handling the estimating, bidding, contracts, general field supervision, and all engineering. Have experience in ready mix concrete, gravel plants and sales engineering. Local or foreign position considered. Must have future. Reply PW-8103, Engineering News-Record, 520 N. Michigan Ave., Chicago 11, Ill.

CONSTRUCTION EXECUTIVE: Prof. Eng., with broad engineering and contracting experience and responsibility in negotiating contracts for the development of major engineering and contracting projects from master planning thru to completion of construction in the catagories of Industrial, Governmental, Municipal, Harbor, Shipyards including community facilities projects. PW-8111, Engineering News-Record.

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REGISTERED CIVIL Engr. Skilled Struct Designer and Detailer wants free lance work. Small Staff avail. Phila. area. PTWW-8061, Engineering News-Record.

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SA-8086, Engineering News-Record
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CLEVELAND TEX TRENCHER

Lorain 820 Shovel, Marion 362 Combination, 80-D Northwest Shovel, Northwest Model 6 Backhoe, Buckeye ¾ Yd. Shovel, Lorain Model 80 1¼ Yd. Shovel, Lorain Model 41 Shovel, Osgood Model 200 ½ Yd. Comb., Bucyrus Models 15-6 and 22-B Cranes, 5—D8's dozers in 2U Series, 5—HD19's dozers, International TD24, TD18, TD9, TD6 dozers, Parsons 310 Diesel Trenchliner, Buckeye C-15, C-10, C-20, 401, 410, 110, 95, P & H Trencher Model 1030, Austin 105, Model 16-S Truck mounted, Garwood 17 Yd. Model 515 Scraper, Bucyrus-Erie 18 Yd. Model 512 Scraper, Bucyrus-Erie 8 to 10 Yd. Model S-67 Scraper, Diesel heavy tandem Warco Motor Grader, International I-6 Bulldozer with rubber tires, Novo Paving Breaker mounted on White Truck, Clamshell and Dragline Bucket—all sizes, Northwest Shovel Fronts Model 2, 25, 6 and 80-D, Marion 362 Shovel Front, Buckeye ⅜ Yd. Shovel Front Model 70, Link Belt Model LS-40 Front, Lima 1201, 802, Manitowoc Shovel Front Models 3500 Std. and Model 3000 Std., Lorain Shovel Front Model 30 ½ Yd. P & H Shovel Front Model 400, Osgood 1½ Yd. Front, Lorain 820 Shovel Front, 10—DW10's with LaPlant Choate Scrapers, 5—LeTourneau Super C Tournapulls, 5—Woodridge Terra Cobra Prime Movers, Backhoe Attachments for P & H 255, Osgood Model 200, Insley Model K-12 and Bay City Model 45, Fairleads for Osgood 200, Insley K-12 and Bucyrus-Erie B22, Crane Booms for Northwest 26, Insley, Osgood and Lorain 820 and 80, Cleveland Back Fill Tamping Machine.

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FS-8121, Engineering News-Record
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W-8080, Engineering News-Record
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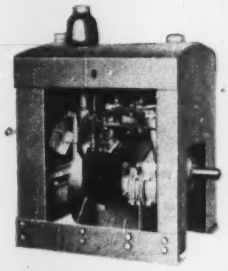

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Engine only, 2 cylinder 2⅞" x 3½
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Air Maze Oil Bath
Magneto
Fan
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Muffler
No. 5 Power Takeoff —Stub Shaft
Weight 385 lbs.

$195.00 each FOB CHICAGO

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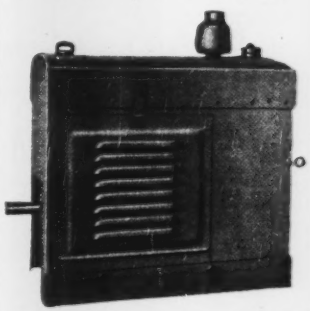

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85 foot boom and leads—oil burner. Excellent Condition. *Immediately available.*

FR-8044, Engineering News-Record
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Also miscellaneous other equipment from large Mississippi River Lock Project.
List and prices upon application.

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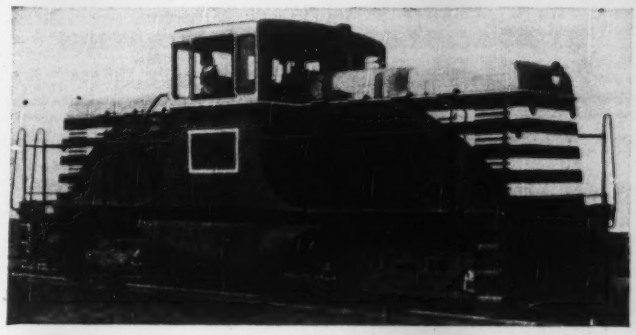

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FS-8095, ENGINEERING NEWS-RECORD
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Tie Plates - Spikes - Frogs & Switches, Etc.

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1859-X Railway Exchange Bldg., St. Louis, Mo.
Stocks at Various Points — Quick Service

USED EQUIPMENT FOR SALE

1—¾ Yd. Shovel, Model 3 Northwest Caterpillar. Year Model 1929—Serial #2966. Powered with Wisconsin Gas Engine. Condition: Good — Motor Overhauled 1949. Price: $4,000.00.
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1—Air Compressor, 220 ft. Ingersoll-Rand Single Stage. Mounted on International Truck Chassis. Condition: Compressor & Truck—Complete Unit—Good. Price: $1,000.00.
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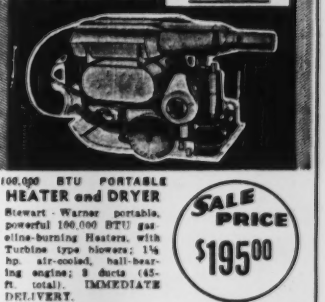

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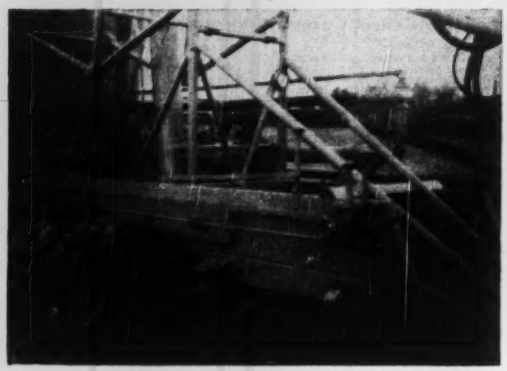
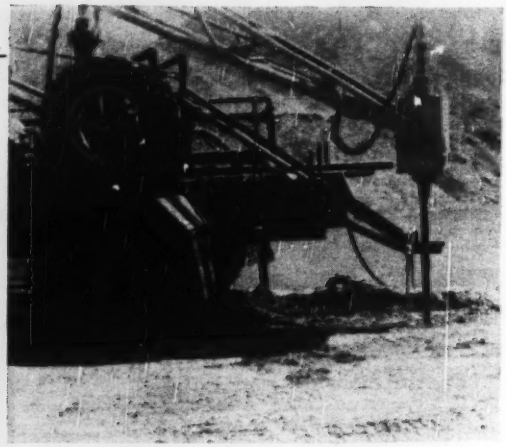
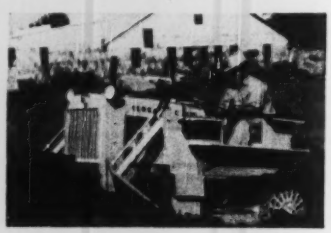




Portable Drilling Machine Features Hydraulic Controls; Drilling Speeds of 5 Fpm

Use of hydraulic equipment on this drilling rig is said to result in elimination of damage caused by sudden stopping and starting; by quick reversing; by heavy overloading; or by extreme rotary drive conditions. Drill shafts used are 10-ft-long hollow pipes threaded at both ends. As each section is lowered, the operator reverses rotation of the fluid motor that provides the drive power, disconnects the pipe, and raises the tower to permit adding another section. All operating controls are centralized near the point of drilling. The rig is self-aligning and keeps the shaft centered directly over the hole at all times. Hydraulic components, manufactured by the Denison Engineering Co. of Columbus, Ohio, consist of a constant volume pump that delivers up to 20 gpm; a lightweight fluid motor mounted to a gear reduction unit; relief valves; and 4-way valves.

Power is provided by the truck's power take-off. Tower position can be as high as 25 ft above ground. If drill locks during operation, a relief valve prevents damage to the equipment. Rigs are available for drilling 2-in.-dia. or larger, holes to depths of 2,000 ft for exploratory or blasting work; or up to 36 in. in dia for water wells.—Reich Bros. Mfg. Co., Terre Haute, Ind.

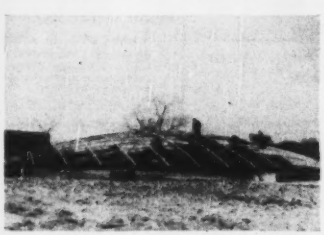


Light-Duty Crawler Tractor

Improved Model GT-25 Terratrac provides a 1st-gear pull exceeding 3,000 lb. Its Continental Red Seal gasoline engine provides over 20 drawbar horsepower and 25 belt horsepower. Features include: High clearance of over 20 in.; track gages vary from 36 to 72-in. wide; and hydraulic system can be used to operate a wide range of attachments. Total weight is 3,290 lb.—American Tractor Corp., 200 Fort Wayne St., Churubusco, Ind.

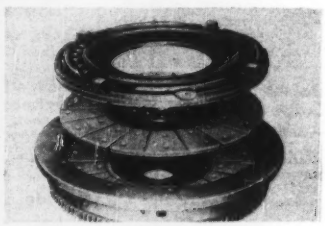
Concrete-Design Slide Rule

Pocket-sized plastic slide rule provides a rapid method of designing reinforced concrete beams and slabs. By setting the graduated slide on known quantities, such as moment and shear, the required beam size, steel area, stirrups, unit shear, bond, K value, and other dimensions are indicated for complete beam design. The slide rule is said to eliminate the need for most formulas, tables, charts, or multiplying slide rule. It is applicable for all values of design stresses.—Seymour Lester, 7906 Santa Monica Blvd., Hollywood 46, Calif.



Domed Aluminum Roof

Lightweight domed aluminum roof can be supported without internal columns over diameters exceeding 600 ft. It consists of extruded aluminum ribs covered with aluminum decking. Insulation, glazing, and ventilation can be incorporated in the design. The light weight of the roof is said to permit use of simpler foundations.—The Aluminum Construction, Ltd., Harold Lasker Co., Inc., Agent, 17 E. 42nd St., New York 17, N. Y.



All-Metal Clutch Plates

Matched-set clutch-plate combinations are designed for extra-heavy-duty truck, tractor, and industrial equipment applications. Each set consists of an all-metal Velvetouch clutch plate and two all-metal friction facings for mounting on the flywheel and pressure plates. Thus, the clutch plates face against matching Velvetouch friction surfaces, instead of against cast-iron faces of the opposing plates. Velvetouch friction material is made from powdered metals, formed under high pressures, and fused with a solid steel backing. The metals used are said to minimize chattering and slipping, and to promote positive clutch action under difficult operating conditions. The all-metal construction is said to run cooler because it carries heat away

(Continued on page 120)

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6. Compare rated crane capacities.
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9. Are alloy steel shafts and heat treated machine cut gears used?
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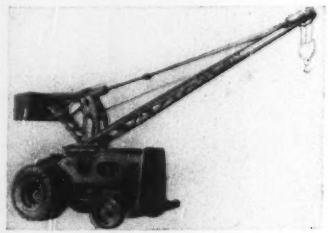
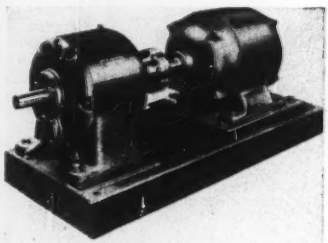
from the wear surfaces. To install, wear surfaces of the flywheel and pressure plates are machined down, the rivet pattern is followed for drilling, and the facings then riveted in place.—The S. K. Wellman Co., 1374A E. 51st., Cleveland 3, Ohio.



Utility Crane

Model UC crane is mounted on a Minneapolis-Moline Model UTI tractor. Lift capacity is 5 tons. Boom is raised and lowered by a hydraulic cylinder that allows safe and accurate control independent of any other operation. An 18-ft or 25-ft boom rotates a full 320 deg. Hydraulic stabilizers on front end give added stability when handling loads over side.—Clyde Iron Works, Inc., Duluth 1, Minn.



Packaged Power Unit

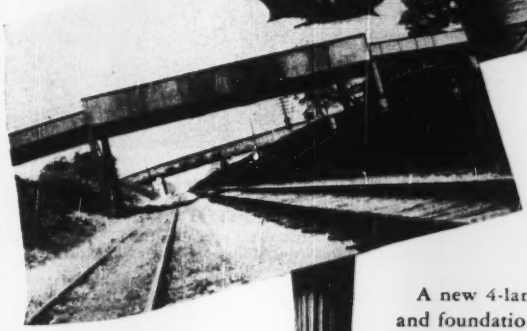
Motogear power unit consists of a compact, enclosed helical gear drive with separate standard motor, flexibly coupled and mounted on one welded steel base plate. A movable plate between motor feet and welded base plate provides for convenient adjustment, should shaft realignment be necessary for any reason. Motogears are built in a variety of sizes, in double or triple reductions, and in a wide range of ratios and horsepowers. Input and output shafts are concentrically in line.—Link Belt Co., 307 N. Michigan Ave., Chicago 1, Ill.

Overspeed Governor

Syenho-Start governor provides for safety shut-down of internal combustion engines and machinery. It is adjustable to decrease or increase shut-down speed while running. Model GFA has automatic re-set; Model GFM, manual re-set.—Synchro-Start Products, Inc., 1046 W. Fullerton Ave., Chicago 14, Ill.

BRIDGING A PROBLEM THE MODERN WAY

Thanks to Monotubes, there were no interrupted train schedules while foundation construction went ahead on this new overpass near Ravenna, Ohio. Owned and engineered by Ohio State Highway Department, bridge was built by Wisintine & Company.



Old 2-lane bridge in foreground—a serious traffic bottleneck—replaced by the modern 4-lane bridge on Monotube foundation.

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YOU'RE looking at another tough construction problem—solved by using Monotube Steel Piles.

A new 4-lane bridge was badly needed. But train traffic was heavy and foundation piles could not be driven from the railroad bed. This meant driving not only at a considerable distance from the crane, but at a much higher elevation than the actual pile cut-offs.

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Monotubes help make important time-and-money savings in all kinds of foundation work. They're cold rolled for high strength, offer exceptional stability and structural values, and are easily extended to any length right on the job. They come in sizes, gauges and tapers adaptable to varying soil conditions. A job *started* with Monotubes can be *completed* with them.

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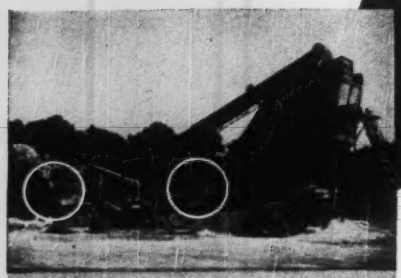

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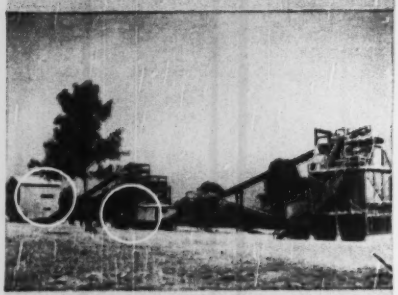
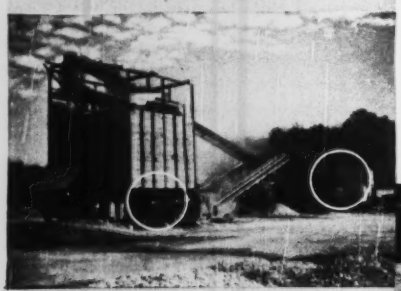


STATIONARY PLANT, producing agricultural limestone and several sizes of crushed rock.



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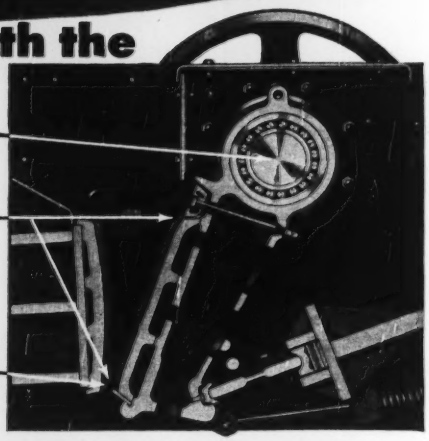

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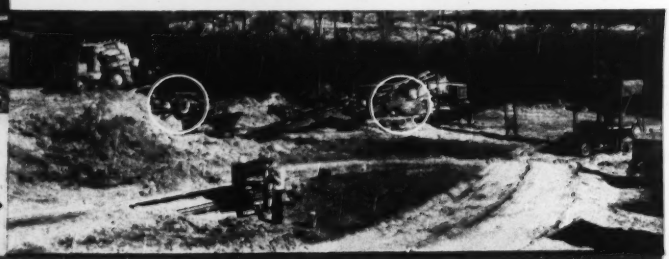

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Manufacturers' Publications

Wellpoint System—The October 5 issue of ENGINEERING NEWS-RECORD contains a review of a handbook describing Griffin wellpoint systems. In this write-up, we listed the price of the handbook at $1.50. Griffin now informs us that complimentary copies are available for distribution to readers of Engineering News-Record. For those who missed the original write-up, we reprint it here in its entirety.—

Principles and practices in the use of wellpoint systems are described in a handbook now available. This handbook contains information on how a wellpoint system functions and describes methods of planning, removal of the system. The manual is pocket-size, 102 pp in length, and contains 59 illustrations and diagrams. Price is $1.50.—GRIFFIN WELLPOINT CORP., 881 E. 141ST., NEW YORK 54, N. Y.

Solderless Electrical Connectors—Bulletin 750 (4 pp) describes the pres-Sure-connectors for solderless splicing and terminating of electrical wires. The bulletin contains complete and detailed data on these connectors and how they are handled and applied.—BUCHANAN ELECTRICAL PRODUCTS CORP., 1290 CENTRAL AVE., HILLSIDE, N. J.

Air-Washers; Humidifiers; Dehumidifiers—Spray-type air washers, humidifiers, and dehumidifiers are described in Bulletin No. 7. Complete specifications and sizes for each unit are listed in the bulletin, and line drawings illustrate their operation. Component parts and accessories are described in detail.—BUENSOD-STACEY, INC., 60 E. 42ND ST., NEW YORK 17, N. Y.

Zeolite Softener—Zeolite softeners for use where relatively small quantities of softened water (less than 100 gpm) are required are described in Publication 4505. Two sizes are listed, each size available in single or double units with greensand, synthetic gel, or resinous-type zeolite material according to the requirements of the water supplies. Drawings, dimensions, and capacities are shown.—COCHRANE CORP., 17TH & ALLEGHENY AVE., PHILADELPHIA 32, PA.

Snow Loaders—Three models of Haiss snow loaders are illustrated and de-

(Continued on next page)

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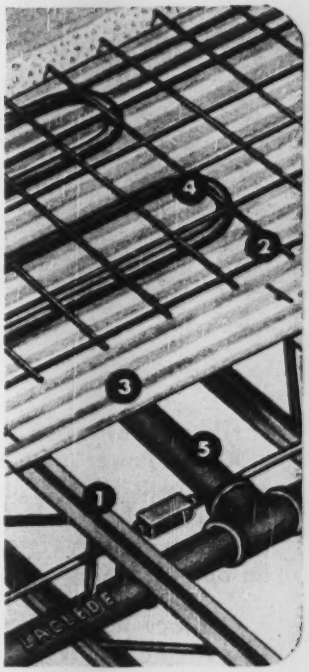

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Literature describing remarkable features of the new ROGERS Power-Lift Detachable Gooseneck Trailer will be sent upon your request; but—more than that—any Rogers Dealer will demonstrate its features, right on your own desk with an *operating scale model.*

Contact him—see how easily it detaches—how the deck can be raised or lowered to avoid unloading and detouring under certain conditions—how disabled, non-powered equipment can be loaded easily—how the design provides giant tires for extra heavy and profitable payloads.

To buy a trailer without seeing this Rogers unit would be like going to the circus without seeing the elephant. Don't do it.

Export Office: 50 Church St., N. Y. 7, N. Y.
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Developed by The Trailer Pioneers

ROGERS BROS. CORP. ALBION PENNA.
135 ORCHARD STREET

scribed in this 8-pager. They are: Model 300 WS (with swivel conveyor); Model 75 WS (wheel mounted with swivel chute); and Model 75 CS (crawler mounted with swivel chute). Rated capacity of these loaders is 20 yd per min. The bulletin describes the important features of the Haiss loaders, and lists complete specifications and dimensions.—GEORGE HAISS MFG. CO., INC., DIV. PETTIBONE MULLIKEN CORP., 141ST ST. and PARK AVE., NEW YORK 51, N. Y.

Zip-Lift Hoists—Bulletin (20 pp) covering new model P&H Zip-Lift hoists is illustrated with two dozen large installation pictures. Bulletin H-20 contains full descriptions and specifications of all Zip-Lift models. A large cutaway drawing shows construction features.—HARNISCHFEGER CORP., HOIST DIV., 4404 W. NATIONAL AVE., MILWAUKEE 14, WIS.

High-Speed Scraper; Wagon—Brochure describes the 2C800 Heiliner with its interchangeable scraper and bottom-dump wagon. Featured are job pictures, cutaways, and a list of specifications. Highlighting the brochure is data on the Heil Hydro-Steer and Super-Axle, and on the Cummins 200-hp diesel engine that powers the unit. Forty refinements of the Heiliner are illustrated in a giant cutaway.—THE HEIL CO., 3001 W. MONTANA ST., MILWAUKEE 1, WIS.

Rock-Salt Storage—How to provide low-cost rock-salt storage is the subject of this 4-p folder. The folder describes rock-salt storage; contains engineering data on weights and volume of rock salt; shows how to compute amount of bulk salt in various shaped piles; and line sketches show storage arrangements.—INTERNATIONAL SALT CO., INC., SCRANTON, PA.

Centrifugal Pumps—Features and advantages of the Mission centrifugal pumps are listed and described in Catalog CP-749B. Outstanding feature claimed is the use of the Sherzer hydraulic principle of streamlined flow from concentric casings. Engineering and technical data in the catalog is presented by a table of specifications and a series of performance curves listing capacities and heads at various speeds.—MISSION MFG. CO., P. O. Box 4209, HOUSTON, TEX.

Water Treatment—Sodium-aluminate treatment of industrial and municipal water supplies is described in a new booklet. The booklet discusses the reaction of sodium aluminate as a water softener and clarifier. In addition, the pamphlet covers treatment

(Continued on page 127)

Matched quality components

another reason why you get a greater return from your investment in a Cleaver-Brooks Steam Boiler

Cleaver-Brooks steam boiler quality is the sum of many qualities. From the rolling-in of the first tube and through every step to completion, the highest standard of engineering, material and workmanship prevail. Every component is the tested product of a manufacturer of known standing — carefully selected by Cleaver-Brooks engineers through test and research.

Your Cleaver-Brooks boiler is the end-product of many specialized engineering talents and manufacturing skills. When you install Cleaver-Brooks you have a steam boiler of foremost quality — with immediate and long-range cost-saving advantages. Cleaver-Brooks self-contained Boilers — 15 to 500 HP 15 to 250 lb. p.s.i.— for oil, gas, combination oil and gas firing.

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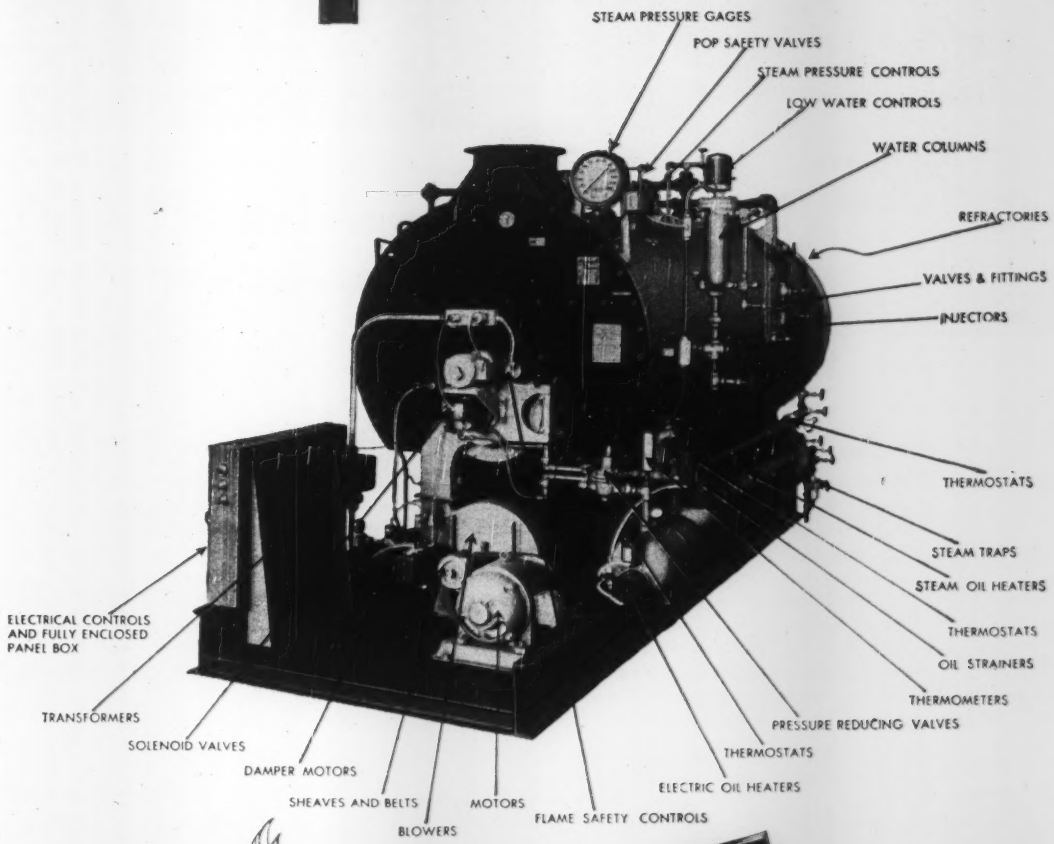

Cleaver-Brooks

STEAM BOILERS

NEW — The Cleaver-Brooks Steam Boiler Catalog — interesting — informative — beautifully illustrated. Write — on your business letterhead for your copy — no obligation.

Steam once powered this locomotive crane, operated by Reading Sand Company. It is now converted to Diesel, but power is still delivered with steam smoothness through a Twin Disc Hydraulic Torque Converter.

Retained: Steam Smoothness Added: Diesel Economy

with a Twin Disc Hydraulic Torque Converter

The Twin Disc Hydraulic Torque Converter delivers power from an internal combustion engine with all the smoothness of steam, in a continuous flow uninterrupted by gear changes . . . and with multiplication of output torque up to five times engine torque.

That's why, when the Reading Sand Company, Penbryn, N. J., converted this Orton-Steinbrenner combination switch engine and crane from steam to Diesel power to increase tractive effort and speed up the loading cycle, they specified a Twin Disc Torque Converter.

With the Twin Disc Torque Converter, the work goes faster and steam-smooth performance is retained. Twin Disc Hydraulic Torque Converters (Lysholm-Smith type) are offered in models to handle internal combustion engines, either gasoline or Diesel, from 40 hp to 1,000 hp. Ask your Twin Disc dealer or write for Bulletin No. 135-C. TWIN DISC CLUTCH COMPANY, Racine, Wisconsin, (Hydraulic Division, Rockford, Illinois).

SPECIALISTS IN INDUSTRIAL CLUTCHES SINCE 1918

of boiler feed water and internal boiler water treatment. Preparation of sodium aluminate solutions is also outlined.—MONSANTO CHEMICAL CO., EVERETT, MASS.

Unit Heaters—Catalog 575 illustrates and describes manufacturing and installation features of the National unit heaters. This 16-pager lists models for horizontal or down-flow delivery of air flow. All of the models listed can be used on either steam or hot-water heating systems. The booklet provides a presentation of good practices in selecting the proper size and type of heaters. Complete specifications, dimensions, and engineering data are provided for installing these heaters. —THE NATIONAL RADIATOR CO., JOHNSTOWN, PA.

Welding Equipment—Complete line of welding supplies is described in this 4-color brochure. Items listed include: The Western Pioneer (No. 70) combination welding and flame-cutting outfit; The Scrapper (No. 96) cutting outfit; a line of torches to provide flames for every purpose; and other welding accessories. The brochure contains a description of construction features claimed for the National line. —NATIONAL WELDING EQUIPMENT CO., 218 FREMONT ST., SAN FRANCISCO 5, CALIF.

Steel Boilers—Consolidated catalog covers the complete line of Pacific steel boilers. The catalog gives ratings, dimensions, and complete data on all boilers—of all sizes—for all types of firing. Roughing-in dimensions are given in full detail.—UNITED STATES RADIATOR CORP., PACIFIC STEEL BOILER DIV., 300 BUHL BLDG., DETROIT 26, MICH.

Asphalt Equipment—Revised catalog 32-D contains a complete listing of standard asphalt products produced by White. These include machinery for maintenance and construction of roads and streets, portable and stationary asphalt plants, concrete vibrators, asphalt and tar-heating kettles, front-end loaders for wheel-type tractors, tool and surface heaters, and kerosene torches.—WHITE MFG. CO., ELKHART, IND.

Concrete Forms—Panels with steel cross members are the subject of a new Symons bulletin. The bulletin illustrates three different size panels as well as the individual pieces used in constructing the steel cross members. Also included in the bulletin is a chart showing the hardware required for panels with steel cross members.—SYMONS CLAMP & MFG. CO., 4265 DIVERSEY AVE., CHICAGO 39, ILL.

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INSURANCE FUNDS have gone into construction since 1922, really hitting stride in Forties; this is Metropolitan's Stuyvesant Town, in New York.

New Money for Construction

It's an old business precept—voiced most lately by General Motors' Charles F. Kettering—that if you can go to an unlimited source, such as the sea, for your raw material, you are on your way to being in business.

There aren't any unlimited sources for money to pay for construction, of course. But there's one source of enormous funds—other than the U.S. government—that has been getting itself into the construction business more and more heavily in the last decade.

That source is the life insurance companies of the United States. Here is an "industry" that had (in 1949) assets of nearly $60 billion—and which has to date invested about $1 billion of its policy-holders' dollars in major work.

• **Good business**—For the life insurance companies—as well as for construction—it has been good business. So good that as 1950 started, according to the Institute of Life Insurance, the companies had more than $157 million worth of housing projects alone under way or contemplated. And that's in addition to some $340 million worth already built.

And it wasn't only housing that was planned or under way. Office buildings, stores, markets were also in the works, because the companies were rapidly branching out into fields including property management, as well as construction.

But in the housing field alone, the insurance men by 1950 had provided homes for more than 42,300 (with 7,200 to come in 1950) families—roughly the entire population of a metropolitan center such as Salt Lake City, Utah. And they had also built the stores, schools and services for such a community.

• **Long time coming**—Through much of their long and tightly regulated history, U.S. life insurance companies were specifically forbidden to hold real estate, excepting for such purposes as company offices, warehouses and the like.

But with their assets constantly expanding—and the number of policies going up with them (in 1950 there were more than 193 million policies outstanding)—they began to look for wider fields for investment of their clients' dollars. Construction—particularly construction of revenue-producing facilities such as apartments—was an obvious outlet.

Finally, in 1922, Metropolitan Life took the plunge. Under special permission from the New York state legislature, Metropolitan began the first large-scale low-rent housing development, 54 five-story units in New York City's Borough of Queens, built at a cost of $7,363,168.

Insurance men are cautious by nature—and legislators are slow. So it was not until 1930 that the Prudential Life Insurance Co. began the first life-insurance experiment in private capital slum clearance with its six-unit Chellis-Austin project in Newark, N. J.

Prudential was pleased with the results, and followed with two more—in 1933 and 1935, also in Newark.

• **Things get rolling**—And now things began to roll. Within a year or two, Metropolitan had started its huge Parkchester development (still the biggest) to provide a total of 12,273 apartments in New York City's Bronx; and followed this in later years with other great developments—Parkfairfax, in Virginia; Parklabrea, in Los Angeles; Parkmerced, in San Francisco; Riverton Houses, Stuyvesant Town, Peter Cooper Village in New York.

Others were not slow to follow. John Hancock Mutual of Boston; Connecticut Mutual Life, of Hartford; Equitable Life, New York Life; New England Mutual, of Boston; Bankers National Life of Montclair, N. J.—the list is long.

• **Pioneering**—While they were building (and realizing an average net of 3½ to 4 percent on their investments) the insurance companies were doing a good bit of pioneering for all industry—and for municipal officials as well.

They brought to the problem of building a life-long habit of checking details, of reading the charts, of gathering statistics and drawing conclusions from them.

They developed methods of mass construction that can be seen in many a public housing project under way today; they insisted on clear, concise specifications; on money saving short-cuts; they didn't hesitate to use new materials, simpler architectural treatments.

And they brought into being expert staffs of analysts and began to train a whole new field of management men.

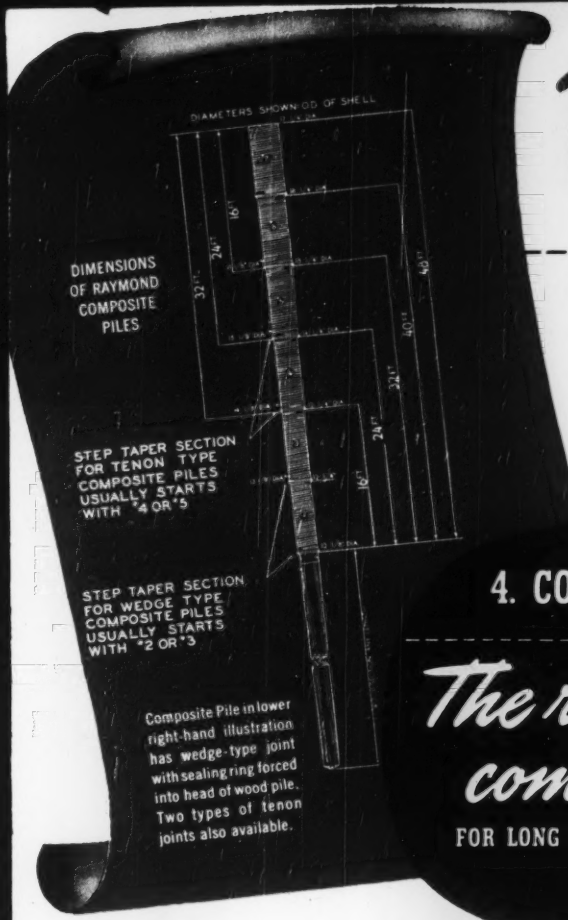
• **Broader still**—It was this last development that broadened the field still farther:

The insurance companies soon had men who were as competent to manage properties as were many of the people engaged in that work. Many a big department store thought that Filene's of Boston was right when it decided its business was merchandising—not building management. Filene's sold its building to Equitable Life, now leases the facilities it uses—transferring many problems to the insurance company.

Raymond MAKES 5 TYPES OF CONCRETE PILES

1. STANDARD . . . 2. STEP-TAPER . . .
3. PIPE STEP-TAPER . . . 4. COMPOSITE
5. GOW CAISSONS

Raymond installs every type of pile: cast-in-place concrete, precast concrete, steel pipe, wood and H-beam. Raymond operations include underpinning, borings and soil investigations, waterfront construction and harbor and river improvements, also cement mortar lining of pipes by the Centriline Corporation, a Raymond Subsidiary.

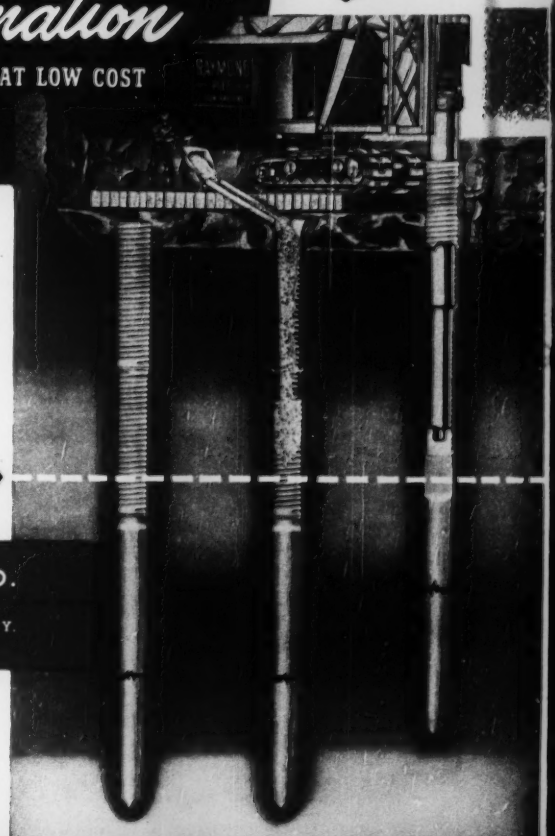

DIAMETERS SHOWN OD OF SHELL
DIMENSIONS OF RAYMOND COMPOSITE PILES
STEP TAPER SECTION FOR TENON TYPE COMPOSITE PILES USUALLY STARTS WITH #4 OR #5
STEP TAPER SECTION FOR WEDGE TYPE COMPOSITE PILES USUALLY STARTS WITH #2 OR #3
Composite Pile in lower right-hand illustration has wedge-type joint with sealing ring forced into head of wood pile. Two types of tenon joints also available.

4. COMPOSITE PILES

The right combination

FOR LONG LENGTH AT LOW COST

Right, driven wood pile is being followed down by pile shell of concrete section. Center, complete pile driven to resistance, pile shell is being filled with concrete. Joint, wedge-type with sealing ring, is below ground-water level. Completed pile is shown at left.



Raymond Composite Piles are used for economy and long length. The concrete upper section extends from the permanent water table up to the underside of the footing, thus eliminating the expensive excavation, sheeting and pumping often required with wood piles.

Raymond Composite Piles have solved many deep foundation problems permanently and at minimum final cost. We shall be glad to advise you, without obligation, whether they are suitable for your project.

PERMANENT WATER LINE

RAYMOND PILES MAINTAIN DRIVING RESISTANCE

Raymond CONCRETE PILE CO.

140 CEDAR STREET, NEW YORK 6, N. Y.

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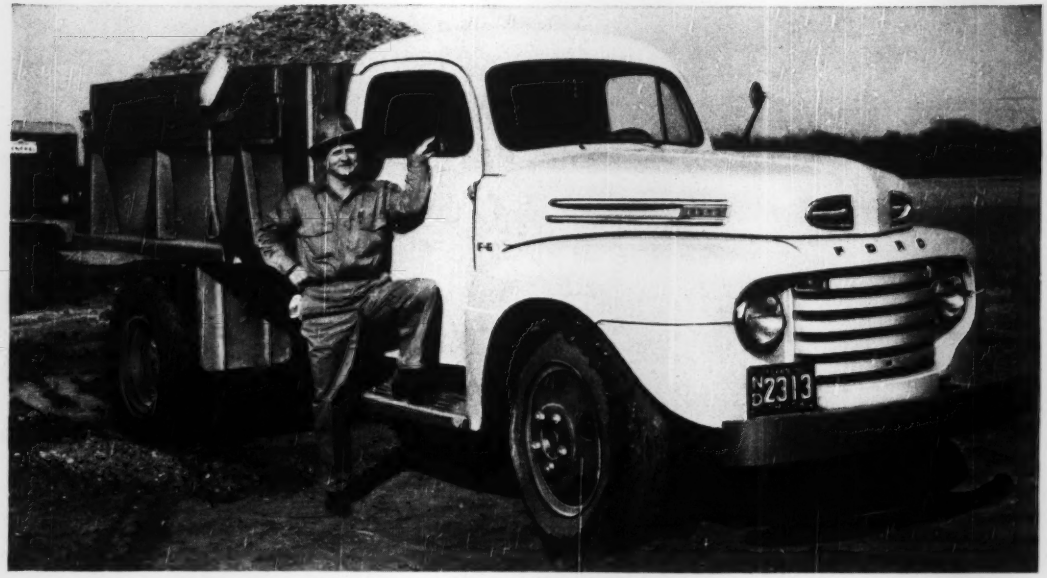

Ford F-6 shown has G.V.W. rating of 16,000 lbs. Over 175 other models available — 95-h.p. Pickups to 145-h.p. Big Jobs.

"I saved about 1½ gallons of gas on a round-trip of 35 miles!" —SAYS J. S. LAIRD

DALLAS, TEXAS

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"Hauling the same load—5 tons of pit gravel—over the same roads, the Ford F-6 saved about 1½ gallons of gas on a round-trip of 35 miles. This is the most economical truck I have ever owned."

On big hauling jobs or small, Ford Trucks are turning in standout records for performance, economy and long life. That's why more truck users today are switching to Ford... to make Ford the indisputable leader in sales gains. Join the Big Switch to Ford! Choose from over 175 models—95-h.p. Pickups to 145-h.p. Big Jobs. See your Ford Dealer about the only truck that gives you a power choice of V-8 or Six.

Ford Trucking Costs Less Because—

FORD TRUCKS LAST LONGER

Using latest registration data on 6,592,000 trucks, life insurance experts prove Ford Trucks last longer!

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